The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Wembley

THOUGH the Chemical Section at Wembley was not complete when the British Empire Exhibition was reopened for 1925 on Saturday, it was at least in a more advanced state than any other. By this time probably the last touches have been added, and the exhibitors will be ready for their expected visitors. In appearance the Chemical Section, which occupies the same site as last year in the Palace of Industry, and has again been organised by the Association of British Chemical Manufacturers, gains appreciably from the fact that the exhibits are fewer by about one-third. Several of the remaining stands are larger, being less crowded they are seen to better advantage, the distraction caused by little odds and ends of exhibits is absent, there is more room for visitors to move about, and the whole effect is more dignified and united. The exhibits include heavy chemicals, dyestuffs, pharmaceutical products, perfumery, soap, etc. There is no chemical engineering exhibit, but there is an attractive new model illustrating the use of British tar in road construction. The scientific section, like the general section, is less crowded, and the educational effect of the exhibits is distinctly better; the appeal is less esoteric and far more popular. Taken as a whole the Chemical Section gives a good idea of the range of British chemical industry, and the total effect is better than twelve months ago. Even in its unfinished state it had many visitors this week, among whom we noticed American guests representing the Merrimac Chemical Co. of Boston and the Hercules Powder Co. of Wilmington. On Thursday morning the King and Queen included it in their tour of the Exhibition.

A Big Man for a Big Job

THE announcement last week of the appointment of Dr. E. F. Armstrong as managing director of the British Dyestuffs Corporation, in succession to Sir William Alexander, M.P., came to most people as a surprise. Dr. Armstrong had not previously been directly associated with dyestuff production, and one had come to regard him as an almost indispensable figure in another great industry largely dependent on chemical science. The surprise, however, very speedily gave place to satisfaction.

The new chief of the B.D.C. brings to an admittedly onerous position a singular combination of scientific and commercial qualifications. He learned his chemistry under some of the greatest teachers of his time. He has himself conducted researches of high importance and of no small difficulty. He has never ceased to urge that, whatever else chemists may be, they should be masters of their own science. Not only has he realised the importance of research, and been a researcher himself, but he has seen the importance of the application of its results in other industries. There is little fear, therefore, that the value of research will be underestimated under his command or that results possessing commercial possibilities will be unappreciated. On the other hand, research has to be co-ordinated with all the other branches of a great industry—neither undervalued nor overvalued—and Dr. Armstrong's experience of successful business organisation should enable him to take a central and balanced view of what is needed all round. Lastly, he has had responsibilities in the handling of men and in commercial investigations. His recent tour in America was undertaken, it is understood, at the request of the late Lord Leverhulme, and that great commercial explorer made few mistakes in selecting men for big and responsible missions.

The task that Dr. Armstrong is taking up is admittedly no light one. On the other hand, the opportunity is a great one for a man with the requisite courage and ability, and this aspect, one imagines, has made some appeal to Dr. Armstrong. His previous non-association with the industry seems to us no serious disadvantage; on the contrary, it may prove a positive advantage, since he has been outside the controversies of the dyestuffs industry and now

brings a fresh and unbiased judgment to the work. Moreover, we misjudge his character if within three months he has not obtained a strong personal grip of the industry in its research, technical and commercial aspects. His experience of the German chemical schools and his later knowledge of German commercial method may here be of real value.

Dr. Armstrong begins where Sir William Alexander left off. The latter had some troublesome problems to face, and he brought the necessary resolution to the task. As the result of his efforts the position to-day is clearer for his successor. The foreshadowed scheme of reconstruction is now under preparation, and this may open a way for another step forward. This new appointment, therefore, may mean a new starting point. Dr. Armstrong, we believe, will command the full confidence of his technical and commercial staff. He can count, too, on the general support of the chemical industry. With a united effort, we may hope to see the business of the Corporation gradually placed on a sound basis. With its own success is largely linked up the success of the British dyestuffs industry, and from the national as well as from the company's point of view Dr. Armstrong's entry on his big task will be watched not only with goodwill but with hope and confidence.

Tar and River Pollution

THE Report which has just been issued by the Standing Committee on Rivers Pollution cannot be lightly passed over by those who are interested in the coal carbonisation industries, for it amounts to nothing less than a severe condemnation of the use of tar on roads and a vindication of bitumen. Emphasis is laid by the Committee on the fact that the official experiments which have been conducted have conclusively shown that the washings from tarred roads are inimical to fish, though the degree of toxicity varies according to the state of the road, the most toxic washings being obtained immediately after the tar is applied and when the surface of the road is breaking up. As far as tests have shown, whenever a compound road-material is used which contains an appreciable quantity of tar, it may be anticipated that at some time or another in the history of the road the rain-washings will be of a toxic character. On the other hand, the experiments carried out by the staff of the Fisheries Department with bitumen showed conclusively that even undiluted washings from bituminous surfaces were harmless. It would appear from the report that the substitution of bituminous road dressings for tar is progressing all over the country, although there are some local surveyors who hold firmly to the opinion that tar is not injurious to fish—an opinion which, the Committee states, is entirely contrary to the facts.

In the case of road-tarring it was possible by a comparatively simple experiment to demonstrate its inevitably prejudicial effect, and by similar experiments to demonstrate the harmlessness of washings from bituminous roads. The Committee, therefore, being in a position, not merely to point out the deleterious effects of tar, but also to indicate a simple remedy for them, felt justified in pressing, and pressed successfully, for the application of the remedy. When one considers the large proportion of the total quantity of tar produced in this country which finds use as a road dressing it would seem that the recommendations which are now made may ultimately have a rather disturbing effect on the value of crude and dehydrated tars, and it would be as well if the tar producers issued without delay a statement of their side of the question.

Aluminium and the Serpek Process

THERE is much speculation at present as to the probability of extended uses for aluminium, and now that chemical engineers have their eyes on this comparatively modern metal there is every possibility that we shall find it playing an increasingly important part in chemical works and operations. The scale, however, upon which aluminium will be used in the future must be governed mainly by its cost, and also by the discovery of a really satisfactory solder. As to the opportunities which present themselves in the direction of reducing prevailing prices of the metal, we are told by Mr. W. G. Rumbold (whose admirable monograph on "Bauxite and Aluminium" has just been published under the direction of the Mineral Resources Committee of the Imperial Institute) that the present two-stage method of producing aluminium, in which the second stage is a costly electrolytic reduction, cannot be replaced by any open furnace method because of the great affinity of aluminium for both oxygen and nitrogen at melting temperature. The prospects of cheaper production seem in part to lie in obtaining a valuable by-product in the alumina refining stage, as suggested by the Serpek process.

The Serpek process, which is one of considerable interest, is well worth recalling, even though it has not as yet obtained a commercial footing. During the war, when all directions in which the supply of fixed nitrogen might be augmented were being explored, the Serpek process was quite a common topic of discussion, and it will be remembered that while its primary object is the fixation of atmospheric nitrogen, it effects the production of pure alumina as a by-product. The process depends upon the fact that when bauxite is mixed with carbon and heated to 1800° C. in a nitrogen atmosphere aluminium nitride is formed, which is subsequently decomposed and yields a hydrated alumina, or an alkali aluminate, and ammonia gas. One is glad at least to hear this recent reference to the process, for Serpek seems to be the sole worker who has accomplished the technical production of nitrides from atmospheric nitrogen, and although certain difficulties militated against the economic success of his earlier plants, there is by no means reason to despair of ultimate triumph. It would seem, too, from the opinion expressed by Mr. Rumbold, that the solution of the technical problems associated with the process might considerably assist in furthering the use of aluminium and in promoting the prosperity of what is likely to become one of the most important of industries.

Exit Gases from Acid Plants

WHEREVER the discharge from a sulphuric acid plant is effected by its own exit pipe there is a coloured escape, which fluctuates in intensity according to the operation of the plant. This coloured discharge has been the subject of experimental work for some

time, not alone by acid manufacturers in this country, but by continental and Japanese chemists, who are interested in this branch of chemical technology. Last year the Alkali Inspector for Scotland made allusion to certain practical trials in that country, which, although promising as regards their efficacy in the removal of the colour, were accompanied by at least one disability. Water was used as the medium for absorbing the coloured discharge, which is due to unabsorbed nitrogen oxides. That this method was effective there can be no doubt, from the report made by Mr. J. H. Young (the Alkali Inspector), but it is not every chemical manufacturer who can dispose of an acid effluent. Assuming such effluent to be retained in the plant, then the question of the evaporation of the water so introduced raises a consideration of some economic importance, as fuel costs, quite apart from other concentration charges, would be incurred. Other workers have sought to introduce a well-regulated quantity of gases from the first chamber to the final Gay Lussac tower as a means of preventing the coloured discharge. What occurs under such conditions is that the nitrogen oxides are reduced by the sulphur dioxide sent forward—in other words, sulphuric acid manufacture is re-established. The drawback attending the last-named method is that unless the gases introduced to the final Gay Lussac tower from the first chamber are carefully regulated they may lead to high exits, even exceeding those allowed by the Alkali Works Regulations Act.

Experimental work on this problem certainly leads to the view that the best method is to absorb the coloured discharge in weak sulphuric acid of about 60 per cent. strength, and this can best be done in a final catch tower or chamber. By adopting this method there is no possibility of spasmodic high escapes occurring, and there is certainly no concentration problem likely to arise such as is entailed when water is used. It is believed that the Chief Alkali Inspector's report for 1924 will contain an interesting record of the work which has been undertaken in Scotland, and this information should be of peculiar value to those chemical manufacturers who are faced with the problem of a coloured discharge.

The Centenary of Benzene

THE decision of the Royal Institution to celebrate the discovery of benzene by Faraday will be generally approved. Apart from the personal interest of such an occasion, benzene, as Professor H. E. Armstrong, the chairman of the committee, points out, is one of the most important compounds known to the chemist and constitutes "the foundation stone of a major section of organic chemistry and of the synthetic dyestuff industry." The celebrations are to take place on June 16, the date on which a hundred years ago Faraday's communication on the subject was presented to the Royal Society. The discovery was made in the laboratory of the Royal Institution, where Faraday had separated benzene from the liquid deposited on compressing oil gas into iron cylinders. We understand that there will be a good representation of American, French and Dutch chemists, and that the celebration will include addresses by British and foreign delegates on Faraday's discovery and its consequences, a dinner in the Goldsmiths' Hall, and a memorial lecture on "Faraday as a chemist," by Sir William Pope. The tickets for the dinner are limited in number and early application is desirable. In the arrangements the Chemical Society, the Society of Chemical Industry, and the Association of British Chemical Manufacturers are co-operating with the Royal Institution.

Points from Our News Pages

The visit of the King and Queen to the Chemical Section at Wembley on Thursday is reported and a survey is made of several interesting exhibits (p. 474).

A photograph is reproduced of Dr. E. F. Armstrong, who has been appointed managing director of the British Dyestuffs Corporation (p. 476).

Chemical trade returns for April show an increase in both imports and exports over last year's figures, but decreases compared with March (p. 477).

Further opposition evidence has been given at the superphosphate inquiry (p. 478).

The death is announced of Professor Albin Haller, Messrs. A. Strang, W. Whewell, W. Rice, F. A. Flack, E. M. Mumford, and Lieutenant-Colonel C. A. Muspratt-Williams (p. 481).

Our Scottish chemical report shows the Heavy Chemical market to be very quiet and no important features (p. 498).

Books Received

FOOD VALUES, WHAT THEY ARE: HOW TO CALCULATE THEM. By Margaret McKillop. London: George Routledge and Sons, Ltd. Pp. 152. 3s. 6d.

A CLASS BOOK OF CHEMISTRY. By G. C. Donington. Part V. Organic Chemistry. By T. M. Lowry and P. C. Austin. London: Macmillan and Co., Ltd. Pp. 176. 3s.

NON-METALLIC MINERALS. By Raymond B. Ladoo. New York: McGraw-Hill Book Co., Inc. Pp. 686. 30s.

MODERN INORGANIC CHEMISTRY. By Dr. J. W. Mellor. London: Longmans, Green and Co. Pp. 1103. 12s. 6d.

The Calendar

1925 May 19	Ceramic Society: Refractory Materials Section. Spring Meeting.	Palace Hotel, Buxton.
20	Royal Microscopical Society: Papers by Professor Robert Chambers, F. I. G. Rawlins, and Dr. R. J. Ludford. 8 p.m.	20, Hanover Square, London, W.1.
21	Chemical Society. 8 p.m.	Burlington House, Piccadilly, W.
21	Royal Society: Various papers communicated by Professor O. W. Richardson, Sir Wm. Hardy, Professor F. G. Donnan. 4.30 p.m.	Burlington House, Piccadilly, London.
22	Royal Institution: Discourse by Dr. T. M. Carpenter. 9 p.m.	21, Albemarle Street, London, W.1.
25	Society of Glass Technology (First Session)—Symposium on "The Constitution of Glass." 7.30 p.m.	Royal Society of Arts, John Street, Adelphi, London.
26	Society of Glass Technology (Second Session)—Symposium on "The Constitution of Glass." 2.30 p.m.	University College, Gower Street, London.
	Annual Dinner. 7.15 p.m.	Hotel Cecil, Strand, London.
27	West Cumberland Society of Chemists and Engineers. Discussion: Smoke Abatement. Introduced by H. Hoy. 7 p.m.	Workington.
29	Chemical Engineering Group: Annual General Meeting. 8.15 p.m.	Chemical Industry Club, Whitehall Court, London.
June 17	Royal Microscopical Society: Annual Exhibition of Microscopic Pond Life. 7.30 p.m.	20, Hanover Square, London, W.1.

Chemical Section at the British Empire Exhibition

Some of the Exhibits

The British Empire Exhibition at Wembley was reopened on Saturday. It again includes a Chemical Section, occupying the same excellent site in the Palace of Industry. On the occasion of our visit this week the Chemical Section had not been quite completed but was rapidly approaching that stage. We give this week notices of some of the stands, and in succeeding issues the remainder of the exhibits will be described.

The United Alkali Co., Ltd.

THE stand of the United Alkali Co., Ltd., which is situated in the Chemical Section of the Palace of Industry, is well worth a visit by all who are interested, not only in heavy chemicals, but also in dye intermediate products and refined chemicals. The stand is arranged in such a way as to indicate the various products of the company which are used in particular industries as, for example, dye making, dyeing, calico printing, paper making and glass manufacture, while there is a special section devoted to an exhibit of small package household commodities, such as cleansers and disinfectants. Mounted above each individual display is a large photograph showing products of the company in actual use in some interesting operation.

Other products not included in any of the above sections are displayed in a separate showcase. These include sodium sulphide, sodium hyposulphite, sodium sulphite, all in various forms for particular industries (*e.g.*, photography and tanning), and a complete range of the seven standard forms in which caustic soda is manufactured, *viz.*, 76/77 per cent., 70/72 per cent., 60/62 per cent., powder, petal, flake and caustic liquor.

The exhibit of intermediate products is particularly interesting and instructive, as it shows in genealogical form the actual products from benzene down to many of its more complex derivatives, such as sulphur blacks and azo dyes. A print of this exhibit may be obtained at the stand by those directly interested.

A very useful handbook, which may be had on application, gives a complete list of the company's products classified for the various consuming industries, including details of the qualities and packages of each product. Among the industries so listed are :—Explosives, leather, glass, ceramics, food products, tobacco, metal grades, oils, fats, and waxes, paint and colour, paper, soap, electrical, etc.

Brunner, Mond and Co., Ltd.

A feature of the exhibit of Brunner, Mond and Co., Ltd., and its associated companies will be a continuous automatic lantern exhibition illustrating the many industrial uses of the companies' chemicals and the world-wide scope of their activities. Slides will be exhibited showing their products in use in some of the more important industries, and short descriptions will be given of the methods employed in the industries portrayed. Other slides will include views of Brunner, Mond and Co.'s offices in the Far East, South America, etc., together with photographs illustrative of life in these countries with special reference to the uses of the companies' activities in these countries.

This year, Brunner, Mond and Co., Ltd., are exhibiting specimens of their grey pressed bricks (calcium silicate). The quality is much superior to that of the usual bricks of this type made in this country. While standing as great a crushing strain as common bricks, grey pressed bricks are less pervious to moisture, and are made by a process which ensures regularity of shape and dimension. A specially selected quality is in considerable demand in place of glazed bricks at great saving in cost, while, in many cases, the use even of the unselected quality enables plaster to be dispensed with. Good quantities are available and prices are moderate.

Specimens of silicate of soda of various strengths and qualities are again exhibited. Two important but comparatively little known uses for this material are receiving special emphasis. The first is a method of road making which has had most excellent results in France and Switzerland. The process is similar to that employed in the case of ordinary waterbound roads, except that a mortar of fine limestone and silicate of soda is used to bind the whole together. One great advantage to be derived from the use of silicate of soda is that the best results are obtained with soft porous chalky limestone, which is normally quite worthless for road construction and in many districts can be obtained at a fraction of the cost of hard materials. Furthermore it is claimed that the silicate-macadam road is far superior even to the finest waterbound roads both in wearing qualities and in freedom from dust.

The great advantages to be derived from the cheap and simple process of treating the surface of concrete with a solution of silicate of soda are also being emphasised. Quite splendid results have been obtained during the last few years by road engineers in various parts of the country, and excellent testimonials have been received as to the greatly increased resistance of heavy wear which has been imparted to the surface of concrete roads by this treatment, which incidentally prevents them wearing smooth and becoming slippery.

Electro Bleach and By-Products, Ltd.

The paper and soap trades and the textile industry are familiar with the uniform and high grades of bleaching powder and caustic soda which are regularly supplied by Electro Bleach and By-Products, Ltd., whilst their soda crystals and salt are standard products. This firm has recently introduced sesquicarbonate of soda, a form of alkali which is practically twice as concentrated as soda crystals, and which is unequalled for the softening of water for domestic and other purposes. It may be used for cleansing the most delicate fabrics without injury and finds wide application in laundries and in the manufacture of soaps and other cleansing preparations.

In addition to their ordinary products, Electro Bleach and By-Products, Ltd., are showing samples of anhydrous ferric chloride and special extra fine carbonate of lime. Ferric chloride requires considerable care in order to produce it in a crystalline, anhydrous form, and the specimen shown is in the form of light, flaky crystals, almost black in colour. The ordinary forms of dry precipitated carbonate of lime as produced by this company find wide application in the stone dusting of mines and in agriculture. The physical character of this substance as ordinarily prepared, however, renders it unfit for a number of purposes for which whiting, another form of carbonate of lime, can be used satisfactorily. The whole question has been investigated in the laboratories of Electro Bleach and By-Products, Ltd., and a process has been evolved by means of which the physical character of the precipitated carbonate is so changed that in some respects it is actually superior to whiting. Its rate of settling in water is much less than that of whiting so that it can be used with advantage in making whitewash for covering cables or for similar purposes. The physical properties of this special extra fine carbonate of lime would appear likely to render it suitable as a basis for certain paints and protective compositions and as a filling material in certain forms of textiles and papers ; that it could probably replace whiting in many processes in which the latter is now considered essential, and its relatively low price would give it a definite advantage over whiting.

The physical properties referred to above, are illustrated by means of a very interesting and ingenious working model in which the rates of settling of the special carbonate of lime and ordinary whiting are compared. Equal amounts of the two substances respectively are mixed with water in similar graduated cylinders and agitated mechanically every ten minutes. In the intervals the relative rates of settling can be observed.

The Castner-Kellner Alkali Co., Ltd.

257, Royal Liver Buildings, Liverpool, are also exhibiting on this stand. Since the Exhibition last year the Castner-Kellner Alkali Co. have issued a number of extremely interesting brochures on some of the various uses of their products. These include pamphlets upon :—Liquid Chlorine, Chlorine and Chlorine Products in relation to Public Health, Chlorine Derivatives of Ethane and Ethylene, Bleaching Agents containing Chlorine, Sodium Perborate and Sodium Peroxide. They have also issued an interesting leaflet on the use of bleaching powder as a preventive measure against foot and mouth disease. The company will be very glad to supply copies of these pamphlets and leaflet to anyone interested.

Of particular interest among Castner-Kellner's products is liquid chlorine, and their pamphlet on "Chlorine and Chlorine Products in relation to Public Health" is of great interest to municipal authorities and public bodies generally. Their pamphlet on "Liquid Chlorine" is one of the most lucid descriptions of the best methods of handling this substance on an industrial scale that has ever appeared in print, and the pamphlet contains detailed illustrations describing the exact method of procedure to be adopted when handling chlorine cylinders.

Electrolytic caustic soda manufactured by this firm is so well known that special literature describing it is unnecessary, but it is interesting to note that this product is now being manufactured in stick form in 1 lb. bottles and other packages suitable for use in the laboratory for analytical and other purposes where a product of exceptional purity is required.

Chance and Hunt, Ltd.

of Oldbury, are among those companies associated with Brunner, Mond and Co., Ltd., and are exhibiting at the same stand. This company originated from the old-established firm of Chance Bros. and Co., of Oldbury, and Wm. Hunt and Sons, of Wednesbury. They have plants operating at Oldbury, Wednesbury, Stafford and Birmingham, where they manufacture chemicals of the highest quality for a wide variety of trades.

Among the products produced, special attention may be directed to their ammonium carbonate for the biscuit, bakery and other trades, sulphuric acid for the sulphate of ammonia, fertiliser and metal industries, hydrochloric acid and muriate of ammonia for the galvanising trades; and liquid ammonia for laundry, pharmaceutical and domestic purposes. Sodium sulphide is produced for the dye trades and for the tanning industry, and a specially pure white sodium sulphide is produced for photographic purposes. Other products of the company include salt of every description; a high quality saltcake for the glass and paper trades; and oxide of iron pigments for the paint and colour trades. Chance and Hunt's "Fortress Brand" is a recognised guarantee of excellence in chemical products.

A special feature of Chance and Hunt's exhibit this year is connected with the use of ferrous chloride for the manufacture of jointless magnesite flooring. The floor of Brunner, Mond and Co.'s stand is made with this new type of flooring, which has recently been worked out at the Government Building Research Station, Acton. Chance and Hunt are manufacturing ferrous chloride suitable for this new method of treating floors, and will be glad to receive inquiries relating to it.

A. Boake Roberts and Co., Ltd.

In their endeavour to bring home to all concerned the importance of the chemical industry and the size and standard to which it has attained, have this year taken a considerably larger space for the exhibition of their products. A very wide range of fine and technical products is shown, the majority of which have only of recent years been manufactured on a commercial scale in this country.

One section of the exhibit is devoted to synthetic chemicals, isolates, essential oils and terpeneless oils, which are chiefly used in perfumery in all its branches and in the flavouring of food products. This portion of the exhibit also includes a variety of essences, flavouring extracts, oils, colours, etc., as used by the confectionery, mineral water and similar trades. A second portion of the exhibit is given over to sulphur dioxide and various salts of this acid which have a very wide technical application. This section also includes a number of phosphates which are in general demand. A third portion shows the solvents and plasticiers which are now becoming so familar to the varnish and lacquer makers in this country. These materials are also used in the preparation of dopes, which are applied to the fabric of aeroplanes, and everyday further uses are discovered for these very valuable materials.

There are also a number of other exhibits worthy of special attention, amongst which are sulphur dioxide in iron cylinders and in glass syphons. The gas has been subjected to pressure to reduce it to the liquid state and is in a most valuable form for technical applications. This material is one of the two preservatives which the Ministry of Health are prepared to permit in this country.

Soda Bisulphite, 65/67% SO_2.—The difficulty in the past has been to obtain this material in a stable form and containing a high percentage of SO_2. The firm have attained this object and their product will keep indefinitely, if properly stored, without losing its SO_2 value. It is a white crystalline product and guaranteed to be pure.

Menthol Recrystallised, guaranteed to be a natural product and to conform to the requirements of the British Pharmacopœia. Since it is a recrystallised article, it is purer in taste and aroma than the crude product.

Aubepine (Anisaldehyde), a product of primary importance in the preparation of compounded perfumes of the hawthorn, meadowsweet and wallflower type. The firm have succeeded in preparing it by a patented process by which it possesses the most delicate aroma and is quite free from any suggestion of the objectionable chemical by-odour which is present in so many aubepines.

Ionone (Alphanone). This article gives a truly surprising reproduction of the odour of the violet in a most concentrated form.

Sulphuryl Chloride, a most valuable reagent used in chlorination on a large scale. It is of particular interest to the dye maker.

Paraldehyde, guaranteed to comply with the requirements of the Pharmacopœia. It is administered as a soporific.

Ester gum, a glycerine ester of resin used as a substitute for the much higher priced natural gums. It is very pale in colour and is almost neutral in reaction.

Amyl Alcohol, Pure.—This material is of the standard quality required for milk testing, and is used in this test to ascertain that the milk contains the required quantity of fat demanded by the Health Regulations.

A range of compound perfumes is shown, suitable for use in soap manufacture and similar applications.

The exhibit also includes an interesting model of a distilling plant, such as is used in the fractional separation of fine chemicals.

Royal Visit to Chemical Section

In the course of their tour of the British Empire Exhibition on Thursday, the King and Queen inspected the gas exhibit and afterwards passed through the Chemical Section. They were received by Mr. Woolcock, who conducted the Queen through the chief avenues and explained the principal features of interest. The Queen appeared to be particularly interested in the exhibits and put many inquiries concerning them, while the King, looking active and fit, carried on an animated conversation with members of the party. The picturesque exhibit of Bryant and May caught the visitors' attention, and they spent a few minutes in the cottage obviously interested in the smoking requisites. From here they turned back to make a second inspection of the beautiful fabrics in the dyestuffs section illustrating the uses of British dyes, and the Queen's fancy was taken by several examples of brilliantly coloured goods. The mementoes of polar expeditions exhibited on the Burroughs and Wellcome stand also detained the Queen, who drew the King's attention to some of the interesting relics, and as they passed on the Queen's gaze was also arrested by the adjoining stand of Ernest Benn, Ltd., with its fine examples of modern technical and scientific publications. The visitors' progress through the Chemical Section was watched by a considerable number of spectators, who frequently applauded them.

American Chemical Visitors

The American chemical visitors now in London include Mr. Salmon W. Wilder, president of the Merrimac Chemical Co., Boston, treasurer and member of the executive committee of the Manufacturing Chemists' Association of the United States, and chairman of the Board of Governors of the Synthetic Organic Chemical Manufacturers' Association of the United States; and Mr. E. M. Symmes, of the Hercules Powder Co., of Wilmington. The latter, who arrived in England this week, is making a tour of the principal European countries. Mr. Wilder has already completed a tour of Europe. He found work going on steadily in Germany, and the people bent on recovering national trade. In Switzerland trade was fair; in France and Belgium recovery seemed to be proceeding fairly well. As regards American chemical trade, Mr. Wilder states that it has been naturally affected by the condition of the textile and steel industries, but the position remains fairly good.

Dr. E. Frankland Armstrong

New Managing Director of the British Dyestuffs Corporation

It was officially announced last week that Dr. E. Frankland Armstrong, F.R.S., had been appointed managing director of the British Dyestuffs Corporation, in succession to Sir William Alexander, M.P.

Born in 1878, the son of Professor H. E. Armstrong, F.R.S., and grandson of Richard Armstrong, a prominent Mark Lane merchant, Dr. Armstrong early decided on an industrial in preference to an academical career and combines in himself the theoretical study with the practical applications of chemistry in a quite uncommon degree. As a type, Dr. Armstrong is as far removed as one could imagine from the wizened recluse of the laboratory depicted in fine antique book-plates. Much more readily might he be mistaken for a bluff and hearty country squire. In spite of his out-of-doors' appearance, however, he has really been a hard student. The

Dr. E. Frankland Armstrong.

almost boyish freshness of spirits which has survived severe study and heavy commercial responsibilities is largely the result of simple methods, a clear mind, and an even temperament. One may hazard a guess that his mind wastes none of its energy on irrelevancies, but selects without conscious effort the things that really matter. It is not so much a studious cultivation of the sense of order as a natural incapacity for disorder; an eye that picks out the things requiring to be seen, and overlooks the rest. Nor are his qualities all on the surface. His quiet manner might easily conceal from the undiscerning the stores of experience which lie in reserve. When the occasion comes, however, he can bring these reserves to bear with immediate effect on a discussion or a business problem, and it is safe to say that those who know him best value his judgment most.

Dr. Armstrong holds the degrees of D.Sc. (London); Ph.D. (Berlin); and Associate and Fellow of the City and Guilds Institute. He is a Fellow of the Institute of Chemistry and of the Royal Society. He studied at the Royal College of Science and the Central Technical College, London; the Universities of Kiel (under Professor Claisen) and Berlin (under Professor van't Hoff and Emil Fischer). He also worked at Copenhagen with Professor E. C. Hansen. On his return to England he was awarded the Salters' Company's Research Fellowship of the City and Guilds Institute, and deciding upon a technical career went to Huntley and Palmer, Reading, as chief chemist. After nine years there, he joined Joseph Crosfield and Sons, Ltd., at Warrington, and for the past ten years has been technical director of that firm, and also, until the end of 1920, of William Gossage and Sons, Ltd., Widnes and Liverpool, and of a number of associated companies of these two firms throughout the world.

Dr. Armstrong's original studies cover a wide field. He carried out research on the formation of acetals with Professor Claisen at Kiel; on the hydrates of calcium sulphate with Professor van't Hoff, for which work he was awarded his Ph.D.; and on uric acid, carbohydrates, and enzymes with Professor Fischer, publishing a considerable number of papers in the German journals. While at Copenhagen he worked on the selective action of yeasts, and published the results of this research in the Royal Society Proceedings. On returning to England, he took up the systematic study of enzyme action, and his work during the three years of his Fellowship enabled him to formulate an explanation of this subject which has since been generally accepted.

His scientific work did not terminate with his entrance into industry; he continued in his spare time the enzyme investigations, and published a number of papers in the Royal Society proceedings. He took special interest in problems of plant chemistry, particularly the inheritance of chemical factors, and co-operated with Professor, now Sir Frederick, Keeble in this work. As this was an entirely new field a very large amount of investigation was required before publication became possible. They had reached a stage when very fruitful results were coming in, when the transference of Dr. Armstrong to the North and of Professor Keeble to Wisley and the outbreak of war caused the cessation of this work, with the consequence that a great deal has remained unpublished. Of recent years he has, in collaboration with Dr. T. P. Hilditch, undertaken the well-known series of investigations on catalysis at solid surfaces.

Apart from his manifold technical duties, Dr. Armstrong takes a great interest in labour matters, and is chairman of the Soap Employers' Federation, and also of the Joint Industrial Council for the soap trade set up under the Whitley scheme. He is a member of the Warrington Labour Advisory Council and many similar bodies, and a J.P. for the County Palatine of Chester. His work has involved the study of questions of works management and the handling of labour from a scientific point of view. A large amount of data on such subjects as industrial fatigue, etc., has been accumulated, and this has enabled Dr. Armstrong to give evidence before half a dozen Government committees on the subject during the last few years.

In the application of science to industry and in the cause of co-operation among scientific workers he has taken a very keen interest. He has served as President of the Society of Chemical Industry and on the Council of the Chemical Society and the Institute of Chemistry and the British Association. He is now President of the British Association of Chemists. He took a very active part in the formation of the Association of British Chemical Manufacturers, and has served both on the Council of that body and on most of its committees which have sought to establish co-operation with scientific workers. In his private life, Dr. Armstrong has broad interests; he is an enthusiastic gardener and takes a great interest in etchings. He recently made an extensive tour of America at the request of the late Lord Leverhulme, and his knowledge of business and scientific enterprise is by no means confined to this country.

New Chairman of British Oxygen Co.

We understand that Mr. K. S. Murray, M.I.Mech.E., who has been for many years the managing director of the British Oxygen Co., has been elected to the chairmanship of that company, rendered vacant by the death of Mr. E. B. Ellice Clark, M.Inst.C.E. Mr. Murray will for the present continue also to discharge the duties of managing director.

This appointment will be regarded as eminently suitable by all who are conversant with the history of the British Oxygen Co. Mr. Murray joined the company (then the Brine Oxygen Co., Ltd.) as an assistant engineer in 1887, about a year after its formation, and not only has he been closely identified with every stage in the steady expansion of the company's business, but it is no exaggeration to say that no person has been more intimately associated with the development of the oxygen industry and the remarkable industrial applications of oxygen which have taken place since the commencement of the present century. Mr. Murray enters on his new duties in difficult times for industry, but his many friends will wish him a successful and prosperous experience in the further responsibilities which he now assumes.

Chemical Trade Returns for April

Imports and Exports Down on Last Month: Increases Over Last Year's Figures

THE imports of chemicals, drugs, dyes, and colours registered for April are valued at £1,314,421. This represents an increase of £156,669 over the corresponding figures for last year, and a decrease of £69,189 on the previous month. The exports are valued at £1,877,928, which represents an increase as compared with the figures for April, 1924, of £12,774, and a decrease of £314,344 on the values for the preceding month—March, 1925.

In the imports calcium carbide figures are doubled, and other notable increases include nickel oxide, saltpetre, sodium nitrate, and tanning extracts. Crude glycerin has fallen from 1,303 cwt. to 224 cwt., and imports of alizarine are practically negligible.

On the export side it is interesting to note the varying markets for sulphate of ammonia, particularly Spain's greatly increased imports. Figures for benzol and toluol are practically doubled, and sodium sulphate shows a great increase. On the other hand, a marked decline is noticed in the case of naphtha, naphthalene, distilled glycerin, and coal tar products.

Imports

Articles Wholly or Mainly Manufactured.	Quantities. Month ended April 30. 1923.	1924.	1925.	Value. Month ended April 30. 1923. £	1924. £	1925. £
CHEMICALS, DRUGS, DYES AND COLOURS—						
Chemical Manufactures and Products (other than Drugs and Dye-stuffs)—						
Acid Acetic ....Tons	678	566	1,097	29,247	25,912	52,814
Tartaric .....Cwts.	3,244	2,480	4,719	13,996	12,452	23,365
Bleaching Materials Cwts.	1,862	5,803	5,590	9,485	7,155	8,901
Borax ..... ,,	6,989	4,900	3,830	8,590	5,370	3,744
Calcium Carbide ,,	69,023	23,982	52,911	48,750	15,660	36,499
Coal Tar Products Value	—	—	—	87,115	20,033	80,193
Glycerin, Crude Cwts.	1,334	1,303	224	2,809	3,197	610
Distilled .... ,,	433	130	207	1,503	513	774
Red Lead and Orange Lead .....Cwts.	4,109	2,616	2,368	6,710	5,121	4,861
Nickel Oxide .. ,,	8,884	41	4,064	29,307	174	20,891
Potassium Nitrate (Saltpetre) ..Cwts.	8,516	5,496	11,001	10,008	6,482	12,073
All other Potassium Compounds..Cwts.	508,471	439,038	257,725	69,138	66,184	56,020
Sodium Nitrate Cwts.	65,037	66,635	168,719	42,169	43,264	108,451
All Other Sodium Compounds..Cwts.	13,971	19,057	24,458	15,311	14,025	20,547
Tartar, Cream of ,,	2,337	3,497	5,009	10,326	13,359	18,280
Zinc Oxide.....Tons	540	674	884	19,432	24,697	30,410
All other Sorts Value	—	—	—	253,951	410,618	245,089
Dyes and Dye-stuffs (except Dye Woods and Raw Dyeing Substances) and Extracts for Dyeing and Tanning—						
Intermediate CoalTar Products used in the Manufacture of Dyes (including Aniline Oil andSalt, and Phenyl-Glycine).....Cwts.	1	60	6	14	616	101
Finished Dye-stuffs obtained from Coal Tar—						
Alizarine.....Cwts.	95	197	4	3,121	5,817	29
Indigo, synthetic ,,	—	—	—	—	—	—
Other Sorts.... ,,	3,206	1,693	1,888	80,351	62,458	45,428
Extracts for Dyeing—						
Cutch.....Cwts.	6,190	7,998	7,131	9,408	12,212	13,819
All other Sorts. ,,	9,707	6,012	6,023	39,398	22,136	19,563
Indigo, Natural. ,,	79	55	33	3,100	1,050	706
Extracts for Tanning (solid or liquid) Cwts.	115,428	50,479	160,568	114,928	47,365	161,156
Painters' Colours and Materials, not elsewhere specified—						
Barytes, ground, including Blanc Fixe Cwts.	78,428	62,191	81,151	18,604	14,746	18,864
White Lead (dry) ,,	6,264	8,618	9,167	11,111	17,448	19,681
All other Sorts.. ,,	55,695	67,912	81,303	95,972	138,116	115,480
Mercury .....Lbs.	113,978	471,697	442,538	16,880	78,280	74,095
Total of Chemicals, Drugs, Dyes, and Colours ....Value	—	—	—	1,184,826	1,157,752	1,314,421

Exports

Articles Wholly or Mainly Manufactured.	Quantities. Month ended April 30. 1923.	1924.	1925.	Value. Month ended April 30. 1923. £	1924. £	1925. £
CHEMICALS, DRUGS, DYES AND COLOURS.						
Chemical Manufactures and Products (other than Drugs and Dye-stuffs)—						
Acid Sulphuric Cwts.	1,403	1,686	1,556	1,640	1,892	2,087
Acid Tartaric, including Tartrates, not elsewhere specified .....Cwts.	1,133	899	701	6,769	5,336	3,862
Ammonium Compounds—						
Chloride (Muriate) Tons	275	309	241	9,798	10,662	7,361
Sulphate—						
To France ..Tons	1,540	158	199	26,610	2,137	2,587
To Spain and Canaries...Tons	2,271	3,625	11,296	39,131	49,519	147,119
To Italy.... ,,	169	154	33	3,039	2,305	438
To Dutch East Indies.....Tons,	1,805	958	693	30,733	14,005	9,503
To Japan... ,,	4,089	4,216	2,900	70,750	59,803	36,350
To British West India Islands (including Bahamas) and British Guiana....Tons	942	340	1,005	16,332	4,696	13,068
To Other Countries .....Tons	2,865	2,697	3,319	48,778	38,639	46,905
Total..... ,,	13,681	12,148	19,445	235,373	171,104	255,970
Bleaching Powder (Chloride of Lime) Cwts.	17,451	17,880	35,661	9,762	9,884	17,846
Coal Tar Products—						
Anthracene...Cwts.	3	251	1,979	5	158	1,055
Benzol and Toluol Galls.	10,169	10,545	19,588	1,296	910	1,616
Carbolic Acid..Cwts.	9,980	9,618	10,547	28,631	21,190	18,204
Naphtha.....Galls.	3,605	50,206	4,331	416	3,501	387
Naphthalene..Cwts.	17,652	3,757	1,173	8,944	2,421	949
Tar Oil, Creosote Oil, etc.....Galls.	2,426,831	1,999,073	1,115,066	104,109	83,960	33,719
Other Sorts...Cwts.	22,305	22,537	29,085	13,242	17,931	18,109
Total.....Value	—	—	—	156,643	130,071	74,039
Copper, Sulphate of Tons	7,577	5,304	5,675	197,833	127,242	130,463
Disinfectants, Insecticides, etc. ....Cwts.	23,874	33,867	30,729	61,396	75,885	77,636
Glycerin, crude ,,	5,319	2,946	3,936	13,361	6,992	11,653
Distilled..... ,,	7,808	16,635	7,567	27,170	65,115	31,987
Total ..... ,,	13,127	19,581	11,503	40,531	72,107	43,640
Potassium Chromate and Bi-chromate Cwts.	2,002	2,144	1,578	5,121	5,041	3,488
Potassium Nitrate (Saltpetre)...Cwts.	1,024	2,133	797	2,231	3,718	1,623
All other Sorts ,,	1,706	4,674	4,152	19,335	12,469	11,156
Total..... ,,	4,732	8,951	6,527	26,687	21,228	16,267
Sodium Compounds—						
Carbonate...Cwts.	588,823	537,121	666,025	158,853	140,933	153,216
Caustic..... ,,	155,258	165,933	133,314	136,343	134,796	105,821
Chromate and Bi-chromate...Cwts.	2,730	3,239	2,755	6,428	6,306	4,797
Sulphate, including Salt Cake...Cwts.	69,911	27,779	63,432	17,043	6,619	11,650
All other Sorts ,,	46,880	52,938	47,230	84,685	69,256	66,734
Total..... ,,	863,602	787,010	912,756	403,352	357,910	342,218
Zinc Oxide.....Tons	456	511	165	16,573	11,934	6,891
Chemical Manufactures, etc., all other sorts.....Value	—	—	—	303,655	273,385	294,113
Total of Chemical Manufactures and Products (other than Drugs and Dye-stuffs)..Value	—	—	—	1,470,012	1,268,640	1,272,393
Dyes and Dye-stuffs—						
Products of Coal Tar Cwts.	7,209	9,982	9,989	65,311	76,768	88,896
Other Sorts .... ,,	5,874	6,277	3,872	7,956	6,785	5,645
Total..... ,,	13,083	16,259	13,861	73,267	83,553	94,541
Painters' Colours and Materials, not elsewhere specified—						
Barytes, Ground, including Blanc Fixe.....Cwts.	6,832	5,941	2,101	3,788	3,036	1,055
White Lead (dry) ,,	15,790	10,455	7,320	37,358	26,250	18,971
Paints and Colours, ground in Oil or Water .....Cwts.	26,336	27,462	40,800	64,444	67,247	92,605
Paints and Enamels Prepared (including Ready Mixed) Cwts.	25,665	28,715	23,416	78,139	90,816	82,751
All other Sorts ,,	43,353	46,239	37,955	99,194	92,641	70,627
Mercury.....Lbs.	44,230	26,351	17,611	6,034	44,069	3,323
Total .....Cwts.	117,976	118,812	111,592	282,923	279,990	266,009
Total of Chemicals, Drugs, Dyes and Colours, Class III. Value	—	—	—	2,049,355	1,865,154	1,877,928

Proposed Protective Duty on Superphosphate

Further Opposition Evidence

THE Committee appointed by the Board of Trade to inquire into the application of the Fertiliser Manufacturers Association under the Safeguarding of Industries Act for a duty on imported superphosphate held a further meeting at Old Palace Yard, Westminster, on Wednesday, when the evidence for the opponents to the proposal was heard.

Mr. A. CHRISTIE, secretary of the National Smelting Co., Ltd., gave information as to the tonnage of sulphuric acid produced by the zinc melting industry. The concentrates being used are produced at the Broken Hill mines in Australia, which was purchased by the Board of Trade and resold to British smelting companies under contracts expiring in June, 1930. The zinc smelting industry might be expected to produce from 115,000 to 135,000 tons of 70 per cent. acid per annum until 1930, which would be equivalent to 80,000 to 93,000 tons of 100 per cent. acid.

Mr. HAROLD G. GOUGH, Chairman of Gough's General Distributing Co., Ltd., of Southampton, said that prior to the war English manufacturers had control of the superphosphate trade and had no fear of competition from the Continent. The prices charged were excessive and the farmer was handicapped. By allowing a prohibitive tariff to be put on, the same position would be restored in an aggravated form. If the works in this country were as favourably situated as were the majority of the Continental works as regards wharfage facilities and railway connections and if they were conducted on similarly up-to-date lines, then considerable savings could be made. Witness gave detailed figures showing savings amounting to 24s. 10d. per ton that could be made and which would turn the present loss of 13s. 2d. into a profit of 10s. 8½d. per ton. There was far too much hand labour used in English works, whereas the foreign works used mechanical handling. Another means by which the position of the English manufacturer could be improved was by making full use of the supplies of rock in Ocean Islands, which at present are under the control of a British company.

Witness then challenged the figures of the manufacturers on various points and specially referred to the amount of 3s. 6d. per ton for packing in bags and putting on rail, which was the average cost of the English manufacturers. He said that he was doing this for other fertilisers for 9d. per ton, and offered to give certified details in confirmation. He added that freight charges were necessarily much heavier if only small steamers could come alongside the works for unloading raw material. He believed that the most economical unit for a plant would be a capacity of 120,000 tons and favoured the erection of, say, six such works in this country in preference to the 90 small works which now existed. His main objection to a duty was the effect upon agriculture, because it seemed to him that the price must be increased by from 15s. to £1 per ton to put the industry in a paying position.

Witness suggested that it would be best to leave the superphosphate industry to work out its own salvation and for the Government to erect, say, two sulphuric acid plants of 150,000 tons each and maintain them in view of emergencies of a national character.

Sir CASSIE HOLDEN, for the applicants, said that this Committee was not the proper tribunal to bring forward such ideal systems. Apparently, by using more mechanical plant, such a scheme would further increase unemployment in the industry, and suggested witness's real object was to safeguard his own position as an importer of foreign superphosphate.

Mr. H. A. BUTTS, agent in this country for the Dutch manufacturers of superphosphate, explained that after the conclusion of the war five works in Holland were brought under one control, the only superphosphate works outside the combine being a farmers' co-operative works. The five Dutch works employed 1,200 men for an output of about 300,000 tons per annum, whilst the British works employed 5,500 men for an output of 400,000 tons per annum, thus showing the extent to which machinery was used in Holland. Fifty per cent. of the sulphuric acid required was made by the works and the remaining 50 per cent. was purchased. He adopted the views expressed by Mr. Gough as to the advantages of deep waterway at the works and said that several of the Dutch works were in this favourable position. He claimed that the Dutch could manufacture superphosphate at £1 per ton less than we could. In reply to Sir Cassie Holden, Mr. Butts said there was no dumping. He sold at the world market price, or not at all. If necessary, with the consent of the Dutch directors, he would produce the figures from the books. He added that the Dutch bought their bags in Calcutta.

The CHAIRMAN said this evidence was very important and asked witness to confine himself strictly to his own knowledge.

Mr. BUTTS said the Dutch figure for filling into bags and loading on to rail was 1s. 4d. as against the 9d. mentioned by Mr. Gough and the 3s. 6d. of the British manufacturers. Mr. Butts said that Belgium exported superphosphate into Holland and that was one reason why the Dutch makers had had to seek new outlets abroad for their output and had built some of their works on the up-to-date lines mentioned. The British makers could not expect to compete unless they did the same.

Mr. JACOBUS TIELROY, manager of the Amsterdam works of the Dutch combine, said that the output of the five works was about 300,000 tons per annum, of which 60,000 tons only is sold in Holland. The Amsterdam factory employed a maximum of 400 men during the year, and the average wages varied from the equivalent of from £3 to £3 10s. per week of 48 hours, the latter being prescribed by law. Of the 110,000 tons per annum produced at Amsterdam, 30,000 tons were sold in Holland and 80,000 tons were exported. The cost of the manufactured sulphuric acid was £1 6s. per ton.

Asked by Sir Cassie Holden what was the technical process adopted at the Amsterdam works, witness explained that the rock was transferred from the ships by conveyors to silos and thence to store by elevators. From here it was taken, by power, to the crushing and grinding mills, thence to another silo, and finally to the mixing apparatus, where the acid was pumped in, the superphosphate being finally transported to storage by mechanical power. Packing was also done automatically.

Mr. TIELROY said he would be willing to let the Committee have costs figures, but he did not want his British competitors to have them, and was promised that they should be kept confidential to the Committee.

Mr. T. M. GUTHRIE, Chairman of the Brechin Agricultural and Trading Co., the ordinary shares of which are largely held by farmers who buy superphosphate from the company, said the yearly turnover was about 3,000 tons of superphosphate and about 5,000 tons of compound fertilisers. For some years the company had purchased its superphosphate from abroad. The company went first to Belgium and subsequently to Holland, for its supplies, and was now taking all its requirements from the Dutch combine. In this way he was able to supply at from 5s. to 7s. per ton less than if they purchased the English product. The present price of 35 per cent. Dutch superphosphate was 58s. per ton against 66s. 3d. for the British. He would prefer to buy British if he could get it at the right price.

Sir CASSIE HOLDEN asked witness if he seriously thought that an increase of 10s. per ton would affect his business?

Mr. GUTHRIE said that he did not think it would, but that was a very much less increase than he had been led to expect.

Sir CASSIE HOLDEN reminded witness that the applicants had suggested a maximum increase of 10s. per ton, with power to the Minister of Agriculture to withdraw it at any time he thought fit.

Mr. A. F. C. VAN DEN BERG, managing director of the Diamond Colour and Chemical Co., Ltd., of York, said that he was of Belgian nationality and started business in 1920, as an importer of fertilisers unattached to any foreign firm. Witness criticised many of the figures of cost put in by the applicants, but eventually the Committee stopped him on the ground that the evidence was not first hand and ought to be given by the Belgian manufacturers themselves. Witness handed the Committee the name of one Belgian firm from whom certain information had been obtained.

The Committee adjourned until Thursday.

Society of Public Analysts

AT the ordinary meeting, held at the Chemical Society's Rooms, Burlington House, on Wednesday, May 6 (Mr. G. Rudd Thompson, president, in the chair), a certificate was read for the first time in favour of Mr. Theodore Rendle. Certificates were read for the second time in favour of Messrs. Lewis Eynon, B.Sc. (Lond.), F.I.C., Jack Rowan Heather, Frederick George Hitchman, and William David Rogers, B.Sc. (Hons. Lond.), A.R.C.S., F.I.C.

The following were elected members:—Messrs. George William Fraser Holroyd, M.A. (Oxon), F.I.C., Cecil Eric Keeley, Andrew Francis Macculloch, M.A., B.Sc. (Edin.), A.I.C., Frank Vegetus North Mitchell, Charles Henry Thomson, Walter Peter Whitley, B.A. (Hons. Oxon).

Abstracts of Papers

"The Adulteration of Conserves, with special reference to Pectin and Agar-agar," was the subject of a paper by Mr. John King, F.I.C. The methods of detecting agar-agar were described, and the hydrolysis of pectin and agar-agar by fruit acids discussed. The detection of agar-agar by the diatom content was possible, even when diatomaceous filters had been used. The most characteristic diatoms occurring in agar-agar were shown by means of photomicrographs, and the differences from diatoms in diatomaceous earths were noted.

In a paper on "The Influence of Palm Kernel Meal on the Composition of Bacon Fat," by J. S. Willcox and H. T. Cranfield, it was stated that samples of the bacon fat from pigs fed on palm kernel meal at the Midland Agricultural and Dairy College had been examined by the usual analytical methods, and the results had shown little variations from those of ordinary bacon fat. Hence, although experts stated that the palm kernel meal had produced a soft fat liable to turn tallowy on keeping, this effect was not indicated by marked differences in chemical composition.

It was stated in a paper on "Points Arising from the Analytical Standardisation of British Chemical Standards," by C. H. Ridsdale, F.I.C., and N. D. Ridsdale, that the completion of the results of the constituents standardised had afforded exceptional facilities for observing the methods and working in general use, and data had been forthcoming as to the accuracy of analytical methods in the hands of chemists of standing. Some of these were now presented for consideration. The field covered was carbon and alloy steel, cast iron, basic slag, and iron ore, and the number of constituents had been considerably over one hundred. The object of the paper was to direct the attention of chemists to the question with a view to recognising the present standard of accuracy and discussing means for raising it to a still higher plane.

"A New Method for the Separation and Determination of Tin in Alloys" was described by B. S. Evans, Ph.D., B.Sc., F.I.C. Most alloys, it was stated, dissolved in a mixture of alcohol and bromine, yielding bromides of the metals; of these bromides, those of tin and antimony were volatile below 300° C., whilst those of lead, copper, zinc, iron, nickel, and manganese were non-volatile. The sample of alloy was covered with the requisite amount of alcohol in a special apparatus and a third of that quantity of bromine was added very gradually. After action had ceased, the mixture was distilled in a current of air from a carnauba wax bath, the temperature of which was raised slowly to 300° C., and the distillate was received below the surface of dilute hydrochloric acid. The distillate was boiled until the separated organic compounds were dispelled, oxidised with repeated small quantities of potassium chlorate, antimony, if any, removed by Jarvinson's method (iron and hydrochloric acid), and the tin reduced, and titrated with iodine in the usual manner. The metals in the residue might be determined by any of the ordinary methods.

"A New Colorimetric Method for the Determination of Cobalt in the Presence of Nickel" was described in another paper by the same author. The method was based on the production of highly coloured cobaltammine when cobalt in ammoniacal solution was treated with sodium peroxide. In absence of interfering elements the cobalt in the sample tube could be matched by the colour formed in a solution of cobalt ammonium sulphate, the tube being left for some minutes after each addition to allow the colour to develop. In the presence of nickel the operation was carried out in a Walpole colorimeter, the blue colour of the nickel being stabilised and rendered entirely quantitative by the addition of sodium citrate; in this way the composite colour produced by the nickel and cobalt could be exactly matched by separate additions of standard nickel and cobalt solutions.

In a contribution on "The Determination of Small Amounts of Iron by Colorimetric Methods," by W. B. Walker, B.Sc., A.I.C., it was stated that the red coloration given by nitric acid with thiocyanate was due to the presence of nitrous acid, and redistilled nitric acid gave no coloration. As free nitrous acid in the nitric acid promoted the oxidation of ferrous salts, it was preferable to remove it by means of hydrogen peroxide after oxidation of the iron. Nitrous acid also interfered with the ferrocyanide method, and methods for preventing this interference in the determination of iron had been devised.

Importance of Pulverised Fuel

Mr. David Brownlie's Paper at Manchester

THE importance of pulverised fuel to the colliery industry and to the community at large was the theme of a paper read by Mr. David Brownlie on Tuesday before the Manchester Geological and Mining Society. Professor Jones presided.

Mr. Brownlie gave a detailed description of the remarkable progress in the use of pulverised fuel firing for steam boilers, particularly during the last twelve months. Over 4,000,000 tons of coal a year, he said, were now being burned in this way. For the colliery industries, especially in view of their present serious position, pulverised fuel firing was of great importance. It gave opportunity for a great economy in consumption of coal at the pithead under the collieries' own steam boilers—a consumption amounting at present to about 17,500,000 tons a year, or 6¾ per cent. of all the coal raised.

Mr. Brownlie showed that the average net working efficiency of colliery boiler plants to-day was 55½ per cent., the lowest figure for any industry. Pulverised fuel made possible an efficiency of 85 per cent., representing a saving of 6 125,000 tons out of the total pithead consumption of 17,500,000 tons. Further, it enabled the mine refuse coal to be burned at high efficiency.

Economic Advantages

The outstanding advantage of pulverised fuel firing to the colliery industry, Mr. Brownlie said, was that it meant the eventual success of low-temperature carbonisation of coal by various methods, since all the residual fuel produced after the extraction of motor spirit, fuel oil, sulphate of ammonia, and rich gas could be utilised at the highest efficiency in place of raw coal. In his opinion, the direct consumption of raw coal and the burning as mere fuel of all the valuable products that could be extracted from it, was doomed. On the most conservative basis, this country could save with the greatest ease 40,000,000 to 50,000,000 tons of coal every year by improving existing methods and without spending millions of money on super-power station schemes.

Mr. Brownlie suggested that the colliery concerns should take up without delay the extensive large-scale study of low-temperature carbonisation, for which over 80 processes were available, to convert their raw coal into efficient smokeless fuel for sale, along with the valuable by-products. In this way the revenue would be enormously increased, the country at the same time would be made independent of others for its supply of liquid fuel and fixed nitrogen (sulphate of ammonia) for the cultivation of the soil, and black smoke, now costing us over £40,000,000 a year in loss and damage, would be banished. If a considerable sum had been spent on the treatment of coal on scientific lines during the last ten years, the colliery industry to-day would have been in a powerful position, and we should also have been well on the way to producing all our own oil; instead of being at the mercy of other distant countries for motor spirit and liquid fuel.

Double Recording Instrument

THE Victorian Government Railways are calling for tenders to be presented by July 8 for the supply and delivery of a double recording instrument. A copy of the specification, etc., can be inspected at the D.O.T. (Room 52).

Chemical and Dyestuffs Traders

Strong Criticism of Official Action

A MEETING of chemical and dyestuffs merchants, organised by the British Chemical and Dyestuffs Traders' Association, Ltd., was held at the Midland Hotel, Manchester, on Wednesday, May 13, Mr. Victor Blagden (Chairman of the Association) presiding. The meeting was preceded by an informal luncheon.

The Chairman, in his address, dealt with the Key Industries Section of the Safeguarding of Industries Act, 1921, the Dyestuffs (Import Regulation) Act, 1920, as matters concerning the Association and the merchant's position. The Association, he said, was not concerned with politics, and the basis of its complaints of unfair treatment concerned neither free trade nor protection, but it was concerned with the way in which the Acts were being distorted by Government Departments and their advisory bodies, and directed as weapons to destroy merchant traders in chemicals and dyestuffs. He was convinced that merchant representatives on advisory bodies, such as the Dyestuffs Advisory Licensing Committee, would prove to be a valuable asset to the efficient working of such committees. With regard to the Dyestuffs (Import Regulation) Act, there were three chief points on which their case was based. The first was non-representation of merchants on the Licensing Committee; secondly, the disclosure to dyestuffs makers in this country of the consumers' names and of their requirements mentioned on the merchant's application; and thirdly, the lack of any useful information as to what licences were granted. He believed he was making a perfectly fair statement when he said that not only was the merchant ignored in this way, but that the Dyestuffs Act was being used as a weapon to drive him out of business. To force a merchant who had built up his business by years of industry to disclose the name of his customer, and then for that customer's name, and particulars of his requirements, to be handed on to competitive trading interests, was intolerable, and he doubted whether it was legal. It was certainly outside the pale of business morality, and the merchants must fight it unceasingly. The other door which stopped the merchant from ascertaining the true position of affairs was that the Association's suggestion for regular and frequent lists of licences granted, specifying the dyes to be issued, had been rejected. No reason was given for the rejection of the proposal, and they were left to draw their own conclusions. Looking at it from all points of view, he was forced, against his inclination, to conclude that the Board of Trade had carefully planned the machinery operating the Dyestuffs Act so that not only should merchanting interests be given no representation, but that in every conceivable way and at every opportunity, their trading activities should be restricted and attacked. He would be interested to learn whether the authorities concerned admitted that to be so or not.

With regard to the Association generally, matters were satisfactory. The membership was gradually increasing, and he appealed to those few, but important, firms in the Liverpool and Manchester districts who were not supporting the general movement, and earnestly asked them to put aside any reason of a local or personal character which might be the cause of their standing out.

The following resolutions were put to the meeting and carried :—

Key Industries

Resolved that this meeting, being a representative gathering of British Traders in Chemicals, approves the principle of the safeguarding of key industries during this period of transition and has no objection to Part I (Key Industries Section) of the Safeguarding of Industries Act, 1921 (which is based solely on grounds of national safety), provided it is strictly limited to the products its name denotes, that is to *bona fide* key industries, but most emphatically protests against the excessive and indefinite interpretation given to it by the Board of Trade in their List of Dutiable Articles which (1) includes hundreds of products still not made in this country after four years of "safeguarding" and on which duty is still levied on imports, (2) includes many hundreds of chemicals which have nothing to do with key industries but are used as raw materials in certain industries producing finished goods for export, thus turning the Act into a protective measure, (3) deplores the continued delay, chaos and uncertainty in clearing goods at Customs and widespread interference with commerce outside the Act due to the vague wording of the Act and the List of Dutiable Articles, and invites the Government to forthwith amend the Act to conform to its proper scope of key industries and to make whatever other alterations that may be necessary to do away with the present unsatisfactory state of affairs which is having a most prejudicial effect on the general trade of the country.

Dyestuffs

Resolved that this meeting of British dyestuffs merchants approves the principle of the establishment of a dyestuffs industry in this country and has no objection to some form of control of the dyestuffs situation during this period of transition. It does not, however, consider that the Dyestuffs (Import Regulation) Act, 1920, in its present form is a suitable measure or is calculated to achieve the object in view and, moreover, most emphatically protests against the one-sided and prejudiced manner in which the Act is being operated whereby (1) merchants are denied representation on the Dyestuffs Advisory Licensing Committee, (2) the names and requirements of merchants' customers are divulged by the Licensing Committee to competitive trading interests outside that Committee, (3) the merchants' interests are ignored and appear to be deliberately attacked, and claims for merchants trading in dyestuffs equality of treatment and representation on all advisory bodies set up in respect of the control of the dyestuffs industry.

A Non-inflammable, Non-poisonous Dope

NEOCELLON, LTD., London, announce that they have put on the market a new non-inflammable, non-poisonous aeroplane dope which possesses exceedingly good covering power. This dope can be transported from one place to another without danger of fire, and even when brought into contact with a flame will not ignite. A highly glossy finish can be produced on any fabric by means of two brushings. The films formed by this solution are non-inflammable, and the dope can be used in conjunction with the firm's flameproofing solution. Thus, if a material is first impregnated with flameproofing, allowed to dry and then brushed with the dope the fabric not only becomes flameproofed, but completely resistant to water, oils, grease, benzol, dilute acids and alkalies, heat and gases. This method of treating aeroplane fabrics is finding favour in most Air Ministries throughout the world.

The firm have also brought out a new preparation in the form of an exceedingly hard lacquer for coating spools and bobbins. This is used in dye works and cotton mills. It is known as the R.B.8 extra hard lacquer, and is colourless or transparent coloured. It produces waterproof and acidproof coatings. When brushed on bobbins, films, which are exceedingly glossy and smooth, are produced. Wood treated in this way is not acted upon by moisture. The lacquer dries at ordinary temperatures in the space of a few minutes and cannot be scratched or chipped. It also has the advantage that it will not take up any dye whilst the material is immersed in solution.

Chemical Company's Liquidation

THE statutory meetings of the creditors and of the shareholders in the compulsory liquidation of Chlorophyl and Chemical Corporation, Ltd., 116, Charing Cross Road, London, W.C., were held before the Official Receiver recently, when a statement of the company's affairs was submitted, showing liabilities £7,771, assets £2,000, and a total deficiency of £25,450 with regard to the shareholders. The Official Receiver said that the company was formed in March, 1921, to acquire and carry on the business of manufacturing chemists and merchants. Its nominal capital was £40,000, of which £19,740 had been issued. Arrangements were afterwards made to secure an agency agreement for the supply of phylloson and other products, and the advertisements and sale of the former had constituted the chief business of the company. The trading accounts disclosed a net total loss of £14,500, chiefly due to the large sums expended on advertisements. The company's failure was attributed to lack of capital, heavy advertising expenditure, the unsuitable nature of the advertisements, and probably the fact that public opinion had been influenced against patent medicines in consequence of a press campaign against one in particular. The meetings resulted in the liquidation remaining in the hands of the Official Receiver.

From Week to Week

SIR MAX MUSPRATT returned to England on Wednesday from a holiday of some weeks' duration in Spain.

THE GOVERNMENT'S PENSION SCHEME was strongly opposed at the annual conference of the Amalgamated Society of Dyers, Bleachers, Finishers, and Kindred Trades last week.

FIRE DAMAGE ESTIMATED AT £3,000 was done to the property of the Limmer and Trinidad Lake Asphalt Co., Ltd., at Leamouth Wharf, East India Dock, London, on Monday. Stores of bitumen were involved.

AT A MEETING of the Committee on Industry and Trade on Wednesday, Sir Arthur Balfour in the chair, evidence was given by Sir Alfred Mond regarding the profit-sharing scheme in operation at the Clydach Works of the Mond Nickel Co., Ltd.

THE NEW LONDON LEAD COMPANY has been formed for the purpose of working the lead mines of Upper Teesdale, which the old London Lead Company relinquished in 1902, after having worked them since the formation of the company in 1688.

CLAIMED TO BE A SOLUTION of the smoke problem an oil gas water plant patented by Mr. R. E. Goldsbrough was demonstrated at Darlington this week. It was shown that crude oil was completely gasified and the cheapest waste was as efficient as crude oil.

GREENOCK SUGAR was first exported to Finland by the steamer *Bodil* carrying 488 tons on Monday. Further consignments are anticipated and the industry has welcomed the possibilities of this new market. Owing to slack trade only two local refineries are at present working.

A PROPOSAL to include various deleterious gases in the nomenclature of "arms" was made by an American at the General Committee of the International Conference on the Control of Traffic in Arms at Geneva last week. The proposal was generally approved and was referred to a technical committee.

THE COMMITTEE OF INQUIRY into an application made by the Incandescent Mantle Manufacturers' Association for the imposition of a duty upon gas mantles proposes to hold public sittings for the taking of evidence at 10.15 a.m. on May 22 and May 25, at the Board of Trade, Great George Street, London, S.W.1.

POLICE FOUND THE BODY OF Mr. S. H. Davies, formerly chief analyst to Rowntree and Co., in woods between Amersham and Beaconsfield on Wednesday. There was a severe wound in his throat. Mr. Davies, who had served Rowntree and Co. from 1897 to 1922 and afterwards as a consultant, was 54, and had been a member of York City Council for several years.

A NEW INSTRUMENT to detect gases in the storage chambers of ships has been produced by Cambridge research chemists and sent for trial on Australian fruit ships. Apples absorb oxygen and give off carbon dioxide and develop diseases if ventilation is insufficient. This instrument, by a chemical process, will record the state of atmosphere automatically.

THE TEXTILE INSTITUTE following upon a grant of a royal charter of incorporation, under which it is enabled to grant diplomas in textile technology, is trying to augment the foundation fund, originally promoted by the late Sir William Mather and afterwards advanced by Sir Frank Warner. The fund now stands at over £12,000, and an additional donation of £500 has just been received from Courtaulds, Ltd.

THE SALT UNION, LTD., of Winsford, Cheshire, has placed with Vickers, Ltd., an order for a sectional pontoon type of floating dock capable of lifting small vessels up to 300 tons displacement. The pumping installation consists of one centrifugal pump, electrically driven, current being supplied from the shore for the pumping and lighting of the dock. The dock will be erected in an arm of the river Weaver, near Winsford, and will be built under the supervision of Roscoe and Little, consulting engineers to the Salt Union.

SIR ALFRED MOND, in a tribute to the late Lord Leverhulme, said that in business he was one of the most original, daring, and creative minds. His place in British industry will be extraordinarily difficult to fill. He had a great capacity for work, great imagination and courage. At the same time, he administered with generous treatment for those working with him in industry. He showed that this was not opposed to his personal advantage, but was quite in harmony with it. He was a pioneer in housing, in co-partnership, and many other directions tending to social welfare.

A VERDICT OF "ACCIDENTAL DEATH" was recorded at an inquest at St. Pancras, on Saturday, May 9, on Mr. John McLoughlin (47), of St. John's Villas, Upper Holloway. He was managing director of an electro-plating company, at Holloway Road, London. Last week in the course of moving plant, fifty to sixty gallons of a solution of sulphuric and nitric acid was transferred from a lead-lined vat to an iron one. The latter commenced to leak, and Mr. McLoughlin and an assistant were so overcome that they were compelled to stop working. Both apparently recovered, but during the night Mr. McLoughlin became seriously ill, and was removed to hospital, where he died on Thursday.

THE BESSEMER GOLD MEDAL for 1925 has been awarded to Dr. Thomas Turner, Professor of Metallurgy at Birmingham.

COLONEL LANE-FOX (Minister of Mines) and a party of about 40 members of Parliament visited the Fuel Research Station at Greenwich on Friday, May 7.

THE OFFICIAL STATEMENT OF REPARATION PAYMENTS during April includes the delivery of dyestuffs and pharmaceutical products valued at 155,415.95 gold marks.

A FELLOWSHIP OF $3,000 per annum has been founded by the president and vice-president of Fritzsche Brothers, Inc., U.S.A., for research in the chemistry of perfumes and essential oils.

SIR JAMES MARTIN is to succeed Lord Kylsant, as President of the London Chamber of Commerce. Sir James has filled in succession the positions of Treasurer, Deputy Chairman, and Chairman of the Council of the Chamber.

THE TYNDALL LECTURES at the Royal Institution will be delivered this year by Professor R. Whiddington on the Passage of Electricity through Vacuum Tubes, commencing on Tuesday, May 19, at 5.15 p.m. Sir William Pope will give an extra discourse on June 12 on "Faraday as a Chemist."

THE OLDEST PRIVATELY CONDUCTED BUSINESS in Montrose closed down this week by the retirement of Mr. John Taylor, dyer. The business, which was acquired by Mr. Taylor's father in 1832, has since been in the family, the present representative of which joined it in 1861, so that he has completed 64 years in the business.

THE SALTERS' INSTITUTE OF INDUSTRIAL CHEMISTRY, Salters' Hall, St. Swithin's Lane, London, E.C.4, has forwarded a booklet setting forth the origin, object, and functions of the Institute, and anyone seeking advice or information regarding training for chemical industry can arrange an interview with the director, Professor Arthur Smithells, D.Sc., F.R.S.

AN AGREEMENT HAS BEEN REACHED as a result of negotiations lasting several months between the French and German potash interests, according to a report from the Alsace potash mines organisation. This agreement gives rise to the belief that in future a permanent fusion of the interests concerned will be reached to safeguard their rights throughout the world.

A LIMITED NUMBER OF GRANTS-IN-AID to young men and women employed in chemical works in or near London who desire to extend their education for a career in industrial chemistry will be allocated by the Salters' Institute of Industrial Chemistry. Applications, giving full particulars and references from those over 17 years of age, should be sent to the director, Salters' Hall, St. Swithin's Lane, London, E.C.4, by June 13.

J. F. CROWLEY AND PARTNERS, of 16, Victoria Street, Westminster, London, S.W.1, announce that on May 4 their offices were transferred to 11, Queen Anne's Gate, Westminster, S.W.1, where, in addition to the usual office accommodation, chemical and physical laboratories for research purposes will be available. The offices at 16, Victoria Street, and at No. 4, The Sanctuary, Westminster, are vacated. The firm's telephone numbers will remain as before, but the telegraphic address will be "Cusec Parl, London."

THE ROYAL INSTITUTION, in association with the Chemical Society, the Society of Chemical Industry, and the Association of British Chemical Manufacturers, will celebrate the discovery of benzene by Faraday, at the Royal Institution, on June 16, the day on which, one hundred years ago, his communication was made to the Royal Society. Three short addresses will probably be given by English and foreign delegates, commemorative of Faraday's discovery and its consequences. Delegates from at home and abroad will then be received and their addresses presented. In the evening a banquet will be held in Goldsmith's Hall. On the previous Friday evening, a commemorative lecture on Faraday as a chemist will be given at the Royal Institution by Sir William Pope.

Obituary

PROFESSOR ALBIN HALLER, Director of the School of Industrial Physics and Chemistry of the City of Paris, aged seventy-five. He rendered valuable services during the war, when he was President of the French Commission on Explosives, and conducted researches in the use and production of poison gas.

MR. ANDREW STRANG, formerly of James Strang and Sons, chemical manufacturers, of Glasgow.

MR. W. WHEWELL, J.P., partner in the firm of J. and W. Whewell, manufacturing chemists, Newbridge, Radcliffe, Lancashire, aged 59.

MR. W. RICE, manager of P. Dobbins and Sons, bone manure manufacturers, Chester.

MR. F. A. FLACK, director and manager of Henry Flack, Ltd., varnish manufacturers, of Borough High Street, London, S.E.

LIEUTENANT-COLONEL C. A. MUSPRATT-WILLIAMS, late Indian Army, aged 63. In 1887 he was appointed Assistant Superintendent of the Gunpowder Factory and the Small Arms Factory at Kirkee, near Poona, and the Gun Carriage Factory, Bombay, and later to Ishapur Gunpowder Factory. In 1898 he was appointed as Chief Inspector of Explosives and served for 22 years, including the war years. He retired in 1920.

MR. ERNEST M. MUMFORD, M.Sc., A.I.C., at Manchester, aged 35.

References to Current Literature

British

HYDROGENATION.—Hydrogenation by the Bergius process. H. G. Shatwell. *J.S.C.I.*, May 8, 1925, pp. 471-477.

AMINES.—Note on the production of benzylaniline. T. J. Nolan and H. W. Clapham. *J.S.C.I.*, May 8, 1925, pp. 220-221T.

REACTIONS.—The effect of colloids in the displacement of lead and copper from their salts by zinc. L. T. M. Gray. *Chem. Soc. Trans.*, April, 1925, pp. 776-780.

The action of natural waters on metallic copper. H. Henstock. *J.S.C.I.*, May 8, 1925, pp. 219-220T.

The velocity of reactions in mixed solvents. Part VIII. The velocity of formation of certain quaternary ammonium salts. H. McCombie, H. M. Roberts and H. A. Scarborough. *Chem. Soc. Trans.*, March, 1925, pp. 753-759.

Note on the action of mixtures of nitric and hydrochloric acids on acetone. W. J. Boyd. *J.S.C.I.*, May 8, 1925, p. 222T.

SILICATES.—Silicate solutions and some silicious gels. J. G. Vail. *J.S.C.I.*, May 8, 1925, pp. 214-219T.

TECHNOLOGY.—Pneumatic transport plants. Part II. W. Cramp. *J.S.C.I.*, May 8, 1925, pp. 211-213T.

TAUTOMERISM.—Ring-chain tautomerism. Part XII. Derivatives of ββ-dimethyl-α-ethylglutaric acid. G. A. R. Kon, L. F. Smith and J. F. Thorpe. *Chem. Soc. Trans.*, March, 1925, pp. 567-573.

Tautomerism of amidines. Part V. Methylation of glyoxalines by diazomethane. Bromination of 4 (or 5)-phenylglyoxaline. W. G. Forsyth and F. L. Pyman. *Chem. Soc. Trans.*, March, 1925, pp. 573-581.

HYDROCARBONS.—Further X-ray measurements on long-chain compounds (*n*-hydrocarbons). A. Müller and W. B. Saville. *Chem. Soc. Trans.*, March, 1925, pp. 599-603.

CATALYSIS.—A theory of the catalytic surface. H. S. Taylor. *Roy. Soc. Proc.*, May, 1925, pp. 105-111.

A study of catalytic actions at solid surfaces. Part XII. Some observations relative to those particles of a catalyst which participate in chemical change. Part XIII. Some factors controlling selective hydrogenation, with particular reference to certain terpene derivatives. E. F. Armstrong and T. P. Hilditch. *Roy. Soc. Proc.*, May, 1925, pp. 111-131.

The catalytic decomposition of nitrous oxide on the surface of gold: a comparison with the homogeneous reaction. C. N. Hinshelwood and C. R. Prichard. *Roy. Soc. Proc.*, May, 1925, pp. 211-215.

United States

GASES.—The measurement of the temperature of a flowing gas. R. T. Haslam and E. L. Chappell. *J. Ind. Eng. Chem.*, April, 1925, pp. 402-408.

FUEL.—Dew points of gasoline-air mixtures. D. P. Barnard and R. E. Wilson. *J. Ind. Eng. Chem.*, April, 1925, pp. 428-429.

CORROSION.—The corrosion of glass surfaces. G. W. Morey. *J. Ind. Eng. Chem.*, April, 1925, pp. 389-392.

The practical use of laboratory corrosion tests. W. E. Pratt and J. A. Parsons. *J. Ind. Eng. Chem.*, April, 1925, pp. 376-381.

Accelerated corrosion tests of copper-zinc alloys by salt spray. W. H. Bassett and H. A. Bedworth. *J. Ind. Eng. Chem.*, April, 1925, pp. 346-348.

OXIDATION.—Oxidation of copper-nickel alloys at high temperatures. N. B. Pilling and R. E. Bedworth. *J. Ind. Eng. Chem.*, April, 1925, pp. 372-376.

REACTIONS.—The reaction of dichloro-acetic acid with aromatic amines. H. W. Doughty. *J. Amer. Chem. Soc.*, April, 1925, pp. 1095-1098.

Further syntheses with ββ¹-dichloro-diethyl ether. L. H. Cretcher, J. A. Koch and W. H. Pittenger. *J. Amer. Chem. Soc.*, April, 1925, pp. 1173-1177.

PHOTO-CHEMISTRY.—Photochemical studies. Part III. The reaction between nitrogen and hydrogen in the presence of mercury vapour, and the resonance radiation of mercury. W. A. Noyes, jun. *J. Amer. Chem. Soc.*, April, 1925, pp. 1003-1009.

NITRO COMPOUNDS.—Two forms of nitroguanidine. T. L. Davis, A. A. Ashdown and H. R. Couch. *J. Amer. Chem. Soc.*, April, 1925, pp. 1063-1066.

ORGANO ARSENIC COMPOUNDS.—The preparation and study of symmetrical bis-arsono-aryl-benzamido-ureas. C. S. Hamilton and R. T. Major. *J. Amer. Chem. Soc.*, April, 1925, pp. 1128-1134.

ESTERS.—Derivatives of *p*-hydroxymethyl-benzoic acid. Part I. Esters. F. H. Case. *J. Amer. Chem. Soc.*, April, 1925, pp. 1143-1147.

ADSORPTION.—A study of adsorption phenomena in the vicinity of the critical temperature. W. A. Patrick, W. C. Preston and A. E. Owens. *J. Phys. Chem.*, April, 1925, pp. 421-434.

Studies in adsorption. Part X. S. Ghosh and N. R. Dhar. *J. Phys. Chem.*, April, 1925, pp. 435-461.

French

HYDROGENATION.—Selective hydrogenation of geraniol. V. Grignard and R. Escourrou. *Bull. Soc. Chim.*, April, 1925, pp. 546-548.

HYDROCARBONS.—On the preparation of true acetylenic hydrocarbons. Part I. M. Bourguel. *Ann. Chim.*, March-April, 1925, pp. 191-235.

ACIDS.—Some observations on mucic acid. E. Khotinsky and T. Epifanowa. *Bull. Soc. Chim.*, April, 1025, pp. 548-554.

The photolysis of dibasic acids. M. Volmar. *Compt. rend.*, April 14, 1925, pp. 1172-1173.

REACTIONS.—The mode of rapid decomposition of methyl formate at elevated temperature. E. Peytral. *Bull. Soc. Chim.*, April, 1925, pp. 562-568.

The catalytic decomposition of acid chlorides. A. Mailhe. *Compt. rend.*, April 6, 1925, pp. 1111-1113.

PHOSPHORUS COMPOUNDS.—Phosphorus chloronitrides. H. Rosset. *Bull. Soc. Chim.*, April, 1925, pp. 518-522.

ALCOHOLS.—Synthetic rhodinol. Part I. V. Grignard and R. Escourrou. *Bull. Soc. Chim.*, April 1925, pp. 542-545.

ELECTRO-CHEMISTRY.—Electrolysis of the alkali sorts of acetic acid in methyl alcohol solution. J. Salauze. *Bull. Soc. Chim.*, April, 1925, pp. 522-537.

Contribution to rapid electro-analysis. Separations by graduated potentials. Part I. A. Lassieur. *Ann. Chim.*, March-April, 1925, pp. 235-267.

NITRO COMPOUNDS.—Nitro derivatives of diphenylglycollic ether. C. Dosios and T. Tsatsas. *Compt. rend.*, April 27, 1925, pp. 1275-1277.

THERMOCHEMISTRY.—Thermochemical study of the sodium derivatives of cyclohexanol. G. Cauquil. *Compt. rend.*, April 20, 1925, pp. 1207-1210.

HYDRAZONES.—The structure of the phenylhydrazones of glucose. M. Frèrejacque. *Compt. rend.*, April 20, 1925, pp. 1210-1212.

German

HYDROGENATION.—Apparatus for fat hardening. Part VI. W. Normann. *Chem. Apparatur*, March 25, 1925, pp. 54-55.

ACIDS.—The nature of the non-dissociated acids. A. Hantzsch. *Z. Elektrochem.*, April, 1925, pp. 167-172.

INSULIN.—Insulin. A. I. Virtanen. *Ber.*, April 15, 1925, pp. 696-698.

SUSPENSIONS.—The viscosity of suspensions, particularly of painters' colours. J. A. v. Deurs and P. E. Raaschou. *Z. angew. Chem.*, April 30, 1925, pp. 382-386.

LIME.—Scientific principles of the lime-burning process. G. Keppeler. *Z. angew. Chem.*, May 7, 1925, pp. 397-405.

ANALYSIS.—Electrometric titration using quinhydrone. H. Niklas and A. Hock. *Z. angew. Chem.*, May 7, 1925, pp. 407-409.

The separation of iron, aluminium, chromium and phosphoric acid from zinc, nickel, cobalt and manganese, and the estimation of the latter. K. K. Järvinen. *Z. anal. Chem.*, No. 3, 1925, pp. 81-100.

REDUCTION.—The zinc arc as a reducing means. A. Stock-A. Brandt and H. Fischer. *Ber.*, April 15, 1925, pp. 643, 657.

NITRO COMPOUNDS.—3-Nitropyridine and its derivatives. A. Kirpal and E. Reiter. *Ber.*, April 15, 1925, pp. 699-701.

The halogenation of 2 : 4 : 6-trinitrotoluene. K. L. Ganguly. *Ber.*, April 15, 1925, pp. 708-712.

Patent Literature

Abstracts of Complete Specifications

231,688. Condensation Products of the Anthraquinone Series, Manufacture of. A. G. Bloxam, London. From Soc. of Chemical Industry in Basle, Switzerland. E. Steinbuch, 63, Metzerstrasse, Basle, Switzerland, and F. Ackermann, 75, Hasenrain, Binningen, near Basle, Switzerland. Application date, May 6, 1924. Addition to 205,525.

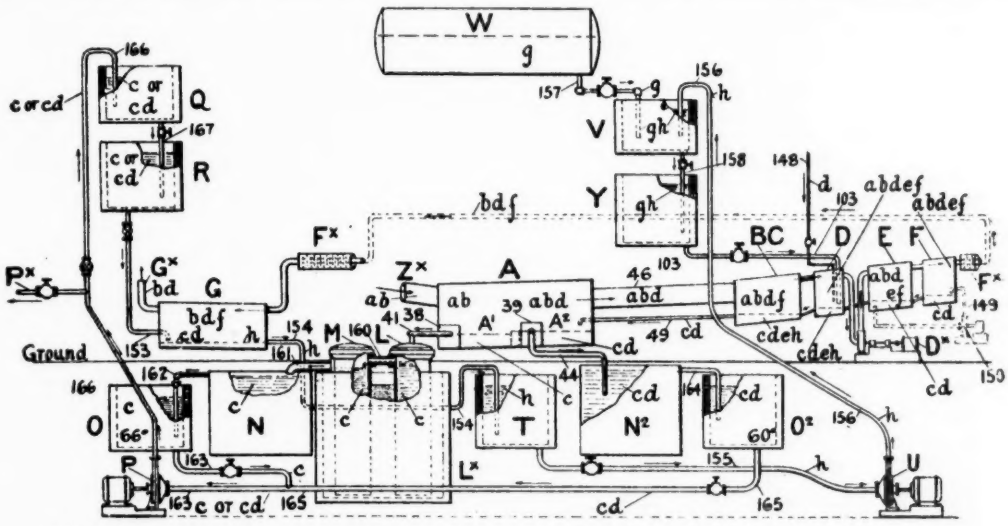
Specification 205,525 (see The Chemical Age, Vol. IX., p. 580) describes condensation products of the anthraquinone series from an amidated anthraquinone derivative of which the amino group or groups may be mono-substituted, and a derivative of a 1 : 3 : 5-triazine halogenated in the nucleus. In some cases the product is condensed with other substances. In this invention, the condensation product from one molecular proportion of 1 : 5-diamino-anthraquinone and two molecular proportions of cyanuric chloride, as well as the corresponding product from 1 : 8-diamino-anthraquinone, are further condensed with a suitable substance ; or one molecular proportion of 1 : 5- or 1 : 8-diamino-anthraquinone is caused to react with two molecular proportions of the same or different derivatives of the 1 : 3 : 5-triazine having halogen substituted in the nucleus. A number of examples of these condensation products are given.

231,791. Deodorizing Fats and Oils, Apparatus for. H. Bollmann, 1, Alsterdamm, Hamburg, Germany. International Convention date, September 3, 1924.

The oil or fat is preheated, and atomised by means of steam injected through a nozzle into a space at reduced pressure. The resulting expansion of the steam causes a condensation of the oil, which passes to a heating device for removal of moisture and repetition of the process. The steam, carrying the impurities, is drawn off by suction.

231,921. Sulphuric Acid, Manufacture of. W. J. Mellersh-Jackson, London. From Geo. F. Hurt Engineering Corporation, 70, East 45th Street, New York, U.S.A. Application date, December 11, 1923.

In this process sulphuric acid is manufactured by the usual chemical reactions of the chamber process, but without the lead chambers. The illustration shows the apparatus in diagrammatic form. The reactions take place in a series of small chambers A—G, in which sulphuric acid passes through in one direction and the gases in the opposite direction. The section A is at the highest temperature, and in this the dilute sulphuric acid from the section BC is acted upon by the hot burner gases, and concentrated. The chamber A is divided by a partition so that sulphuric acid of 66° Bé. collects in the compartment A^1, and more dilute acid in the compartment A^2.



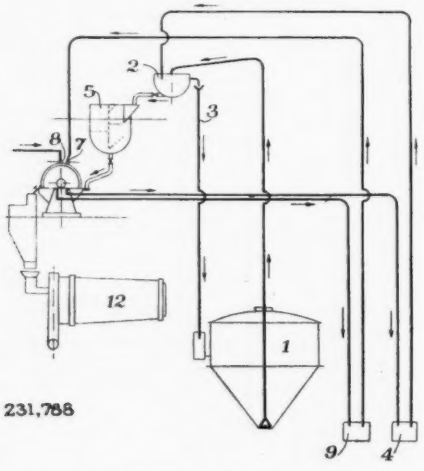
231,921

Two reactions take place in the next section BC, one of which is the de-nitration step in which $NHSO_5$ is converted into H_2SO_4. Lower oxides of nitrogen are liberated and pass on to the next chamber. In the reaction stage C, the lower oxides of nitrogen are oxidised and pass on to the section D. In this section, the sulphur dioxide gas is absorbed and nitroso sulphuric acid is formed, which is absorbed by the liquid and carried into the section BC. Nitrous sulphuric acid and nitric acid are supplied to the section D as required. The gases are then forced by a blower D^x into two sections E, F, which replace the usual series of lead chambers. The gases finally pass to section G which represents the Gay-Lussac tower. Each of the sections contains a quantity of acid, which is sprayed into the space above so as to come into intimate contact with the hot gases. The spray is not sufficiently fine to be carried away with the gases. The section F is charged initially with water or dilute sulphuric acid, which passes through to the section A where it emerges as concentrated acid. Section G is fed with strong cold sulphuric acid, which absorbs the nitrogen oxides and the resulting liquid is afterwards introduced into section D. The concentrated acid flows into a cast iron cooling vessel L immersed in a tank L^x through which water is circulated, and thence to a similar cooler M. The acid then passes to a lead cooling vessel N, and thence to a storage tank O.

The weaker or 60° Bé. acid passes from compartment A^2 to a lead cooling vessel N^2, and thence to a storage tank O^2. An acid pump P is employed for the purpose of withdrawing acid and forcing it through the outlet P^x. Some of the acid in A is required for the plant, and is forced into a measuring tank Q and thence to a feed tank R which supplies as required to section G. The nitrous vitriol from the tank G passes into a receiving tank T from which it may be transferred by an acid pump U to a measuring tank V. Additional nitrogen is supplied to the absorption vessel D, preferably in the form of nitric acid from the tank W, which discharges into the tank V. The latter discharges into a feed tank Y which supplies the absorption vessel D. The spraying of the liquid in each chamber is caused by the upward discharge of compressed air or gas from a nozzle submerged in the liquid. The small size of the sections of the apparatus and the relatively small volume of liquid and gas at any stage ensures a quick response to any adjustment of the controlling valves. A detailed description is given of the various units of the plant, Reference is directed in pursuance of Section 7, Sub-section 4 of the Patents and Designs Acts of 1907 and 1919 to Specification Nos. 187,016, 180,546, 149,648, 19,084/1913 and 15,459/1912.

231,788. Ammonium Sulphate, Manufacture of. H. A. Gill, London. From Soc. des Fours à Coke Semet Solvay et Piette, Soc. Anon., 100-1, Avenue de la Toison d'Or, Brussels. Application date. December 30, 1924.

The object is to obtain dry and neutral sulphate of ammonia. Crystals produced in a saturator 1 are drained in a vessel 2, the acid liquor returning through a pipe 3 to the saturator.



The crystals are then mixed with a filtrate from the vessel 4, and the suspension is passed to a mixer 5, and thence to a rotary vacuum filter 6. The filtrate passes to the tank 4 and the crystals are sprayed with liquor from a tank 9, from nozzles 7. This filtrate also passes to the tank 4. A second spraying then takes place from the nozzles 8 with fresh saturated ammonium sulphate containing ammonia, ammonium carbonate, or bicarbonate. The salt is then quite neutral, and passes to a dryer 12.

231,935. Obtaining Carbon from Peat, Lignite, Sawdust or other Carbonaceous Material for Decolorising and Deodorising and other Purposes. The Artificial Coal Co. (Hamon Process), Ltd., 6, Hill Street, Jersey, and Count L. Le Warner Hamon, 21, Park Square, Portland Place, London. Application date, January 9, 1924.

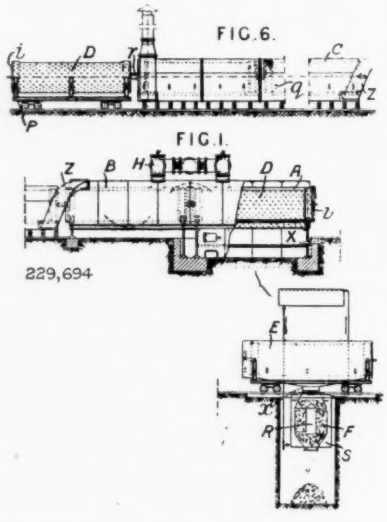
The peat, lignite, or sawdust is dried until it contains 25—30 per cent. of moisture, and then ground and mixed with lime to assist in disintegrating the material. The material is then passed by an airtight feeding device into a rotating retort heated to 850°-900° C., and a current of carbon dioxide, superheated steam, hydrogen, or chlorine is passed through the retort to activate the material. The carbon is then delivered into water, washed with acid to remove ash or impurity, and then washed with water and finally dried.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—208,151 and 209,767 (A. Albert) relating to production of organic mercury compounds, see Vol. X, pp. 202 and 300 ; 210,073 (Haco Co., Ltd., Berne) relating to manufacture of bismuth compounds, see Vol. X, p. 300 ; 211,841 (C. Clerc and A. Nihoul) relating to treatment of complex ores containing zinc, see Vol. X, p. 39 (Metallurgical Section) ; 217,235 (E. L. Rinman) relating to dry distillation of alkalised waste liquor from soda cellulose manufacture, see Vol. XI, p. 148 ; 220,609 (H. Hocking) relating to manufacture of red lead, see Vol. XI, p. 401.

International Specifications not yet Accepted

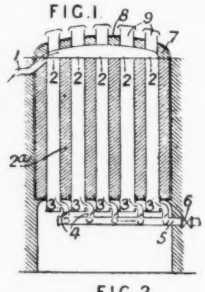
229,694. Carbonizing Wood. E. D. Deperrois, 18, Avenue de la République, Paris. International Convention date, February 20, 1924.

Wood, peat, and lignite are carbonized in perforated sheet iron containers in a horizontal retort. The containers D have a charging opening extending along the top, and are closed by iron plates *i*. The retort A B is heated externally by gas in a furnace X, and the distillates drawn off through outlets H. The cylinders D are connected by draw gear *r*. and may be pulled through drying and carbonizing retorts to a cooling cylinder E. The material is then discharged through a funnel *x* to a cooling chamber F surrounded by a water jacket S and having an internal cooling vessel R. The drying tunnel C is heated by flue gases entering by a conduit Z and passing to a stack P.



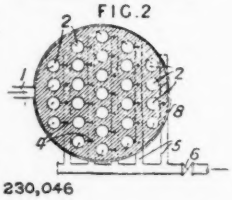
230,045. Aluminium Nitrate and Potassium Nitrate. Norsk Hydro-Elektrisk Kvaelstofaktieselskab, 7, Solligaten, Oslo, Norway. International Convention date, February 27, 1924.

Leucite is treated with a residual liquor containing nitric acid, potassium nitrate, and aluminium nitrate. Silicic acid is filtered off, and the solution evaporated, when pure potassium nitrate is deposited. Further evaporation yields a mixture of potassium and aluminium nitrates, which are then washed with 60 per cent. nitric acid. This removes all the potassium nitrate and some aluminium nitrate, leaving pure aluminium nitrate. If stronger nitric acid is used, less aluminium nitrate is dissolved. The liquor containing nitric acid, potassium nitrate, and aluminium nitrate is used again for treating leucite.



230,046. Hydrogen Retorts. Soc. L'Oxhydrique Française, 25, Rue Béranger, Malakof, Seine, France. International Convention date, February 29, 1924.

An apparatus for use in the iron-steam process comprises a number of narrow cells 2 in a firebrick mass 2^a. Each cell has a closure box 3 with an emptying plug and gas outlet. Gas is admitted by a pipe 1, and passes through the cells at a rate controlled by valves 4. A removable cover 7 has openings 9 which can be closed, and the whole apparatus may have a metal casing 8. Means may be provided for passing gas through groups of the cells in series.



230,055. Dyes. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, February 28, 1924.

Diazotized nitranilines containing an acid group as substituent are coupled with sulphonic or carboxylic acids of 2-naphthylamine or its derivatives to obtain azo dyes which give blue to violet shades on wool. Examples are given of dyestuffs from (1) 2 : 4-dinitraniline-6-sulphonic acid and 2-methyl-naphthylamine-7-sulphonic acid, 2-naphthylamine-7-sulphonic acid, 2^1-carboxyphenyl-2-naphthylamine, phenyl-2-

naphthylamine-6-sulphonic acid, or 2-amino- or 2-methylamino-8-naphthol-6-sulphonic acid; (2) 2:4-dinitro-1-amino-6-benzoic acid and 2-methylnaphthylamine-7-sulphonic acid; (3) 2:6-dinitraniline-4-sulphonic acid, and 2-methylnaphthylamine-7-sulphonic acid.

230,063. Acetic Anhydride. Consortium für Elektrochemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, February 25, 1924.

Acetic acid vapour is passed over a heated metaphosphate of sodium, potassium or lithium, mounted on a carrier such as silicon or silicon carbide, to obtain acetic anhydride. The temperature of the catalyst should be above 700° C., and at this point some mixtures of phosphates melt, so that the acetic acid vapour is passed through the molten catalyst. The catalyst may be prepared by immersing carborundum or silicon in disodium hydrogen phosphate solution containing orthophosphoric acid. The water is evaporated off, and the product heated to 900° C. Another catalyst consists of a molten mixture of lithium carbonate, disodium hydrogen phosphate, and orthophosphoric acid, which has been heated to 850° C. When the catalyst becomes contaminated with separated carbon, this may be separated by blowing air through, or by dissolving in water and filtering.

230,082. Synthetic Drugs. Chemische Fabrik Auf. Akt. (vorm. E. Schering), 170, Mullerstrasse, Berlin. International Convention date, February 29, 1924.

Acridyl-aminophenyl-arsinic acids are obtained by the reaction of a 9-halogenacridine and an aminophenyl-arsinic acid. The preparation is described of 9-acridyl-*p*-aminophenyl-arsinic acid, acridyl-3-amino-4-oxyphenyl-arsinic acid, acridyl-3:4-diaminophenyl-arsinic acid, 4-nitro-9-acridyl-*p*-aminophenyl-arsinic acid.

230,106. Carbon Monoxide and Hydrogen. A. A. L. J. Damiens, 23bis Rue des Binelles, Sevres, Seine-et-Oise, France. International Convention date, March 3, 1924.

Water gas is freed from ethylene, acetylene, and oxygen, and the carbon monoxide is then absorbed by means of a cuprous compound such as the oxide, sulphate, or chloride suspended in sulphuric acid. The gas and the cuprous suspension are passed in counter current. The carbon monoxide and the cuprous compound may be subsequently liberated by heating.

230,413. Separating Hydrogen by Liquefaction. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédées G. Claude, 48, Rue St. Lazare, Paris. International Convention date, March 8, 1924.

Hydrogen is extracted from mixtures by partial liquefaction and rectification, and acetylene and other gases soluble in ethylene are removed by adding ethylene, which may be that extracted from the gases in a previous operation.

Latest Notifications.

233,316. Process for the preparation of sodium sulphide or similar, chemicals in the form of small lumps. Chemische Fabriken Kunh Heim and Co., Akt.-Ges. May 1, 1924.

233,318. Processes for the manufacture of cellulose by boiling wood or similar material with bisulphite solutions. Peetz, Dr. A. April 30, 1924.

233,320. Centrifugal separators. Aktiebolaget Separator. May 1, 1924.

233,335. Apparatus for the carbonization and distillation of wood. Malbay, R. May 5, 1924.

233,337. Clarifying and/or filtering process and apparatus for the treatment of cane juices, liquors, solutions of sugar, or syrup, in the manufacture of either raw or refined cane sugars and their by-products. Ragg, J. J. April 30, 1924.

233,367. Colloidal emulsions and processes. Whittelsey, T. November 6, 1922.

Specifications Accepted with Date of Application

207,809. Coal or other carbonaceous substances, Plant for the distillation of. Kohlenveredlung Ges. November 30, 1922.

208,715. Aluminium, Production of. Aluminum Co. of America. December 21, 1922.

208,725. Peat and other bituminous fuel, Process of carbonising and gasifying. Naamlooze Vennootschap Handelsonderneming Feynald. December 20, 1922.

210,434. Alkali sulphides and sulphydrates, Process for obtaining. Soc. Nationale d'Industrie Chimique en Belgique Soc. Anon. January 23, 1923.

215,007. Arylidoquinones, Manufacture of. Soc. of Chemical Industry in Basle. April 24, 1923.

216,130 and 218,628. Highly-active decolorising charcoal, Process for the manufacture of. H. Muller-Clemm and Ges. fur Chemische Produktion. May 14 and July 5, 1923. 218,628 addition to 216,130.

218,615. Normal butyl alcohol, Manufacture of. Ricard, Allenet et Cie. July 7, 1923.

218,662. Absolute alcohol, Process of manufacture of. Distilleries des Deux-Sèvres. July 6, 1923.

219,653. Substantive azo dyestuffs, Manufacture of. Soc. of Chemical Industry in Basle. July 27, 1923.

222,856. Electrolytic cells. Electrizitats-Akt.-Ges. Schuckert and Co., October 3, 1923.

224,913. Alkyl resorcinols, Manufacture of. Sharp and Dohme, Inc. July 31, 1923.

225,552. Fatty acids, glycerine and the like, Process and apparatus for the distillation of. Metallbank und Metallurgische Ges. Akt.-Ges. and W. Gensecke. November 28, 1923.

228,863. Malonic acid esters, Manufacture of. Soc. Chimique des Usines du Rhône. February 7, 1924.

232,653. Insoluble metal compounds for use as pigments, Production of. J. Bedford. December 19, 1923.

232,656. Alloys. Sir R. A. Hadfield. December 27, 1923.

232,680. Titanium oxide, Production of. A. L. Mond. (*Metal and Thermit Corporation.*) January 23, 1924.

232,724. Liquid hydrocarbons of the benzol type and the like, Method of and apparatus for continuously distilling. Koppers Coke Oven Co., Ltd., (*H. Koppers.*) February 9, 1924.

232,740. Polymethine dyestuff, Manufacture of. W. Carpmael. (*Farbenjabriken vorm. F. Bayer and Co.*) March 11, 1924.

232,742. Acid and chemical proof structures for electrolytic metallurgical and chemical operations. Consolidated Mining and Smelting Co. of Canada, Ltd., F. S. Willis and E. A. Stimmel. March 12, 1924.

232,799. Black vat dyestuffs, Manufacture and production of. J. Y. Johnson. (*Badische Anilin and Soda Fabrik.*) May 24, 1924.

232,834. Hydrocyanic acid, Process for producing. Deutsche Gold und Silber Scheideanstalt vorm. Roessler and O. Liebknecht. August 1, 1924.

Applications for Patents

Abbott Laboratories and Marks, E.C.R. Process for making arsonophenyl amino alcohols. 11,795. May 6.

Adam, M. A., and Zdanowich, J.O. Cellulose acetates, etc. 11,788. May 6.

Akt.-Ges. für Anilin-Fabrikation. Manufacture of brown sulphurised dyestuffs. 11,692. May 5. (Germany, May 23, '24.)

Akt.-Ges. für Anilin-Fabrikation. Dyeing jute fibre, etc. 11,693. May 5. (Germany, July 4, '24.)

Allgemeine Ges. für Chemische Industrie. Production of light hydrocarbons. 11,804. May 6. (Germany, December 19, '24.)

Arnold, C., and Dow Chemical Co. Manufacture of metal from metallic chloride. 11,845. May 7.

Boberg, T., Techno-Chemical Laboratories, Ltd., and Testrup, N. Bromine and iodine recovery. 11,546. May 4.

Bradley, G. W. J. Manufacture of ammonium, etc., salts. 11,603. May 5.

Bramwell, F. H. Catalytic apparatus for synthesis of ammonia. 11,489. May 4.

Crundell, S. F. W., Llewellyn, W. B., and P. Spence and Sons, Ltd. Preparation and use of titanium compounds. 11,980. May 8.

Desborough, A. P. H., Green, B. M., and Thaysen, A. C. Fermentation processes for production of n-butyl, alcohol, and acetone. 11,828. May 6.

Drysdale, W., and Drysdale and Co., Ltd. Centrifugal pumps. 11,746. May 6.

Heyl, G. E. Distillation retorts. 11,760. May 6.

Macleod, J., and Rankin, R. Distillation of naphthalene. 11,866. May 7.

Sandoz Chemical Works. Process for immunising fibres, yarns, etc. 11,784. May 6. (Germany, May 7, '24.)

Soc. Chimique des Usines du Rhone. Manufacture of acetic anhydride and aldehyde. 11,672. May 5. (France, October 13, '24).

Soc. of Chemical Industry in Basle. Manufacture of condensation products of the anthraquinone series. 11,817. May 6. (Switzerland, May 13, '24.)

Tyrer, D. Manufacture of iron perchloride. 11,815. May 6.

Tyrer, D. Manufacture of barium nitrate. 11,816. May 6.

Voisin, U. B. Manufacture of aluminous cement. 11,565. May 4. (France, May 6, '24.)

Wallace, G. W. Production of decolorising carbons. 11,561. May 4.

Westrum, L. S. van. Application of hydraulic cement, etc. 12,144. May 9.

Whittelsey, T. Colloidal emulsions, etc. 11,651. May 5. (United States, Nov. 6, '22).

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, May 15, 1925.

THE slight improvement noted in trade last week has continued although trade generally still leaves a good deal to be desired. Prices are maintained and stocks continue light. The export market may be described as being a shade better, but there is no outstanding feature to report.

General Chemicals

ACETONE continues steady at £76 per ton, with a tendency to harden; stocks are light.

ACID ACETIC is unchanged. Price for 80% technical is £39 per ton and £40 per ton for pure.

ACID CITRIC is unchanged and supplies available at 1s. 5d. per lb.

ACID FORMIC continues steady, with a fair volume of business passing at £50 per ton.

ACID LACTIC has been in demand, and is extremely firm at £43 per ton for 50% with a tendency to advance.

ACID OXALIC.—Demand continues moderately satisfactory, and stocks are now mainly in first hands. Price is firm at 3¾d. per lb.

ACID TARTARIC continues sluggish, and the price is round about 11½d. per lb. with little substantial business passing.

ALUMINA SULPHATE.—The extreme competition continues, and in addition trade is only moderate.

ARSENIC.—There is a slightly more healthy tone in this market, but little actual business has been accepted. The position continues nominally as noted in our last issue.

BARIUM CHLORIDE is in good demand and is firm at £11 per ton.

CREAM OF TARTAR is quite active, and a satisfactory business has been booked at round about £75 to £77 per ton.

EPSOM SALTS.—Demand is good and the makers are well occupied.

FORMALDEHYDE continues steady in price, but the demand is very poor. Price is round about £41 per ton.

LEAD ACETATE continues in active request, with white at £46 to £46 10s. per ton, and brown £43 to £44 per ton.

LIME ACETATE is uninteresting as regards the volume of trade transacted, but the tendency is firmer. To-day's quotation is £15 10s. per ton for grey on 80% basis.

METHYL ALCOHOL.—The improved tendency has been maintained without any substantial volume of business being reported. Price is about £48 to £50 per ton.

POTASSIUM CHLORATE is as scarce as ever and is extremely firm at 4¼d. per lb.

POTASSIUM PRUSSIATE is firm and in good request at 7½d. per lb.

SODIUM ACETATE continues idle. There are a few cheap parcels in second hands, but the regular sellers are asking from £21 to £22 per ton.

SODIUM BICHROMATE is unchanged.

SODIUM HYPOSULPHITE continues quiet and price is unchanged. There has been a small increase in the demand for photographic quality at British makers' prices.

SODIUM PRUSSIATE.—Quite a fair volume of business is reported and the market is firm at 4¼d. to 4½d. per lb.

SODIUM NITRITE is moderately active and is without change in value at £22 10s. to £23 per ton, ex wharf.

SODIUM SULPHIDE continues easy, and continental competition is severe.

ZINC SULPHATE is a fair market, and supplies can be obtained at round about £13 to £14 per ton.

Coal Tar Products

The market generally in Coal Tar Products is quiet, and little change in prices is reported.

BENZOL 90% is steady at 1s. 9d. to 1s. 9½d. per gallon on rails.

PURE BENZOL is quoted at 1s. 11d. to 2s. per gallon on rails.

CREOSOTE OIL is firm at 5¾d. to 6d. per gallon on rails in the North, and 7d. to 7¼d. per gallon in London.

CRESYLIC ACID is easy in price, and is quoted at 1s. 8d. to 1s. 9d. per gallon on rails, in bulk, for the pale quality 97/99%, while the dark quality 95/97% is quoted at 1s. 6½d. to 1s. 7d. per gallon.

SOLVENT NAPHTHA is stationary, at 1s. 3½d. per gallon on rails.

HEAVY NAPHTHA is worth from 1s. 1d. to 1s. 2d. per gallon.

NAPHTHALENES are dull, and are quoted at £3 5s. to £3 15s. per ton for the lower qualities, while 74/76° quality is quoted at £5 to £5 10s. per ton, and 76/78° at £6 to £6 10s. per ton.

PITCH.—Market is unchanged. To-day's approximate values are 40s. to 42s. 6d. f.o.b. main U.K. ports.

Nitrogen Products Market

Export.—During the last week or two only small sales have been made for export, and the buyers were almost entirely purchasing for Spain and the Canary Islands. Prices have been about £13 5s. per ton f.o.b. It is inevitable that the demand should slacken now that the season is coming to an end. From June onwards the British producers are quoting £12 5s. per ton with additions for delivery later than September. The German producers have announced their prices for some European countries, and the basis appears to be about £11 15s. per ton in single bags at the German frontier. The course of the market will depend on whether the European synthetic plants will be operating during the course of the year. Our experience is that production is forthcoming much later than anticipated by the companies operating these plants.

Home.—The home demand has commenced to fall off. Most of the farmers have purchased their requirements for this season. Orders are still coming in, but for small quantities, from several parts of the country. The present home price, £14 14s. per ton delivered to consumer's nearest station for neutral quality, basis 21·1 per cent. nitrogen, will be adhered to until the end of May. It is confidently expected that next season's home prices will be lower. Whether next season's scale will operate from July 1 (as last year) or from June 1 is still unknown.

Nitrate of Soda.—There has been a firmer tone in the nitrate market on account of a considerable movement of stocks from the hands of dealers to consumers. As a consequence cargo lots have fetched higher prices, and these can be purchased now at from £11 13s. to £11 15s. per ton c.i.f. chief European ports. This somewhat unexpected movement will reduce considerably the amount of nitrate carried over into the new fertiliser year. Next season's scale of prices has not yet been decided. It is anticipated in the most authoritative quarters that the scale will be about the same as last year. However, it is thought that the scale will be a lower one.

American Market Movements

(From *Drug and Chemical Markets.*)

HEAVY chemicals moving in routine way. Ammonium chloride lower as weak holders unload stocks. Bleach very firm. Pure benzene lower in many quarters. Other light oils steady. Intermediates quiet. Thiocarbanilid, diethylaniline, and monoethylaniline lower. Dimenthylaniline very firm at 33c. to 35c. lb.

Fine chemicals were reported to be somewhat more active last week, although very quiet. Citric acid from abroad was easier, camphor quiet and menthol slightly firmer.

Vegetable oils show no improvement as buying continues in a routine way. Chinawood oil easy. Linseed oil unsettled. Animal oils and greases maintaining a fairly steady position.

Crude drugs maintained a seasonal activity with few new developments. Lycopodium continued to be firm with dandelion and buchu still weak.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at retailers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£21 to £23 per ton.
Acid Boric, Commercial.—Prices reduced by £5 per ton. Crystal, £40 per ton, Powder, £42 per ton.
Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d., according to purity, strength and locality.
Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 65s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.
Bleaching Powder.—Spot, £10 10s. d/d; Contract, £10 d/d. 4 ton lots.
Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.
Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carriage paid.
Copper Sulphate.—£25 to £25 10s. per ton.
Methylated Spirit 64 O.P.—Industrial, 2s. 7d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
Nickel Sulphate.—£38 per ton d/d. Normal business.
Nickel Ammonia Sulphate.—£38 per ton d/d. Normal business.
Potash Caustic.—£30 to £33 per ton.
Potassium Bichromate.—5d. per lb.
Potassium Chlorate.—2¾d. to 3d. per lb.
Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton. Carr. pd.
Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.
Soda Caustic, Solid.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength: 20s. less for contracts.
Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.
Sodium Acetate 97/98%.—£24 per ton.
Sodium Bicarbonate.—£10 10s. per ton, carr. paid.
Sodium Bichromate.—4d. per lb.
Sodium Bisulphite Powder 60/62%.—£16 to £17 per ton, according to quantity, f.o.b., 1-cwt. iron drums included.
Sodium Chlorate.—2¾d. per lb.
Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool. Nominal.
Sodium Nitrite 100% basis.—£27 per ton d/d.
Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.
Sodium Sulphide conc. solid. 60/65.—About £15 per ton d/d. Contract £14 15s. Carr. pd.
Sodium Sulphide Crystals.—£9 5s. per ton d/d. Contract £9 2s. 6d. Carr. pd.
Sodium Sulphide, Pea Crystals.—£15 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—5d. per lb. Quiet demand. Crude 60's, 1s. 6d. per gall. Little demand.
Acid Cresylic 97/99.—1s. 8d. to 2s. per gall. Fair business. Pale, 95%, 1s. 6d. to 1s. 10d. per gall. Dark, 1s. 6d. to 1s. 9d. per gall. Little demand.
Anthracene Paste 40%.—3d. to 4d. per unit per cwt.—Nominal price. No business.
Anthracene Oil, Strained.—7d. to 8d. per gall. Unstrained, 6d. to 7d. per gall.
Benzol.—Crude 65's.—9d. to 11½d. per gall., ex works in tank wagons. Standard Motor, 1s. 4½d. to 1s. 6d. per gall., ex works in tank wagons. Pure, 1s. 9½d. to 1s. 11d. per gall., ex works in tank wagons.
Toluol.—90%, 1s. 7d. to 1s. 8d. per gall. More inquiry. Pure, 1s. 10d. to 2s. per gall. Steady demand.
Xylol Commercial.—2s. 3d. per gall. Pure, 3s. 3d. per gall.
Creosote.—Cresylic, 20/24%, 8d. to 8½d. per gall. Little demand. Middle Oil, Heavy, Standard specification, 6d. to 7d. per gall., according to quality and district. More inquiry.
Naphtha.—Crude, 8d. to 9d. per gall. Solvent 90/160, 1s. 4d. to 1s. 6d. per gall. Demand good. Solvent 90/190, 11½d. to 1s. 1d. per gall. Steady business.
Naphthalene Crude.—Cheaper in Yorkshire than in Lancashire. Drained Creosote Salts, £3 to £5 per ton. Demand falling off. Whizzed or hot pressed. £6 to £9 per ton.
Naphthalene.—Crystals and Flaked, £12 to £15 per ton, according to districts. Very quiet.
Pitch.—Medium soft, 37s. 6d. to 42s. 6d. per ton, according to district. More inquiry for next season. Few sellers.
Pyridine.—90/160, 19s. to 19s. 6d. per gall. Market more active. Fair demand. Heavy, 11s. 6d. to 12s. per gall. More inquiry.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.
Acid H.—3s. 9d. per lb. 100% basis d/d.
Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.
Acid Neville and Winther.—5s. 8d. per lb. 100% basis d/d.
Acid Salicylic, technical.—11½d. to 1s. per lb. Price reduced. Improved demand.
Acid Sulphanilic.—9d. per lb. 100% basis d/d.
Aluminium Chloride, anhydrous.—10d. per lb. d/d.
Aniline Oil.—7½d. per lb. naked at works.
Aniline Salts.—8d. per lb. naked at works.
Antimony Pentachloride.—1s. per lb. d/d.
Benzidine Base.—3s. 8d. per lb. 100% basis d/d.
Benzyl Chloride 95%.—1s. 1d. per lb.
p-Chlorphenol.—4s. 3d. per lb. d/d.
p-Chloraniline.—3s. per lb. 100% basis.
o-Cresol 29/31° C.—3d. per lb. Demand quiet.
m-Cresol 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
p-Cresol 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
Dichloraniline.—2s. 3d. per lb.
Dichloraniline S. Acid.—2s. 3d. per lb. 100% basis.
p-Dichlorbenzol.—£85 per ton.
Diethylaniline.—4s. 3d. per lb. d/d., packages extra, returnable.
Dimethylaniline.—2s. 2d. per lb. d/d. Drums extra.
Dinitrobenzene.—9d. per lb. naked at works.
Dinitrochlorbenzol.—£84 10s. per ton d/d.
Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. per lb. naked at works.
Diphenylaniline.—2s. 10d. per lb. d/d.
G. Salt.—2s. 2d. per lb. 100% basis d/d.
Monochlorbenzol.—£63 per ton.
a-Naphthol.—2s. 3d. per lb. d/d.
B-Naphthol.—1s. per lb. d/d.
a-Naphthylamine.—1s. 3¼d. per lb. d/d.
B-Naphthylamine.—3s. 9d. per lb. d/d.
m-Nitraniline.—4s. 2d. per lb. d/d.
p-Nitraniline.—2s. 2d. per lb. d/d.
Nitrobenzene.—5¼d. to 5½d. per lb. naked at works.
o-Nitrochlorbenzol.—2s. 3d. per lb. 100% basis d/d.
Nitronapthalene.—10d. per lb. d/d.
p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.
p-Nitro-*o*-amido-phenol.—4s. 6d. per lb. 100% basis.
m-Phenylene Diamine.—4s. per lb. d/d.
p-Phenylene Diamine.—9s. 9d. per lb. 100% basis d/d.
R. Salt.—2s. 4d. per lb. 100% basis d/d.
Sodium Naphthionate.—2s. 2d. per lb. 100% basis d/d.
o-Toluidine.—10d. per lb.
p-Toluidine.—2s. 3d. per lb. naked at works.
m-Toluylene Diamine.—4s. per lb. d/d.

Wood Distillation Products

Acetate of Lime.—Brown £11. Quiet market. Grey, £15 10s. per ton. Firmer. Liquor, 9d. per gall. 32° Tw.
Acetone.—£78 per ton.
Charcoal.—£7 5s. to £9 per ton, according to grade and locality Fair demand.
Iron Liquor.—1s. 7d. per gall 32° Tw. 1s. 2d. per gall. 24° Tw.
Red Liquor.—10d. to 1s. per gall. 14/15° Tw.
Wood Creosote.—2s. 9d. per gall. Unrefined.
Wood Naphtha, Miscible.—4s. 9d. per gall. Only moderate market. 60% O.P. Solvent, 5s. per gall. 40% O.P.
Wood Tar.—£4 to £5 per ton. Demand slack and stocks being held.
Brown Sugar of Lead.—£43 10s. per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 7¼d. to 1s. 5d. per lb., according to quality. Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.
Arsenic Sulphide, Yellow.—2s. per lb.
Cadmium Sulphide.—4s. 4d. per lb., according to quantity.
Carbon Bisulphide.—£32 to £35 per ton, according to quantity.
Carbon Black.—6d. to 6½d. per lb., ex wharf.
Carbon Tetrachloride.—£62 to £67 per ton, according to quantity, drums extra.
Chromium Oxide, Green.—1s. 4d. per lb.
Indiarubber Substitutes, White and Dark.—5¾d. to 7¼d. per lb.
Lamp Black.—£48 per ton, barrels free.
Lead Hyposulphite.—9d. per lb.
Lithopone, 30%.—£22 10s. per ton.
Mineral Rubber "Rubpron."—£16 to £18 per ton f.o.r. London.
Sulphur.—£10 to £12 per ton, according to quality.
Sulphur Chloride.—4d. per lb., carboys extra.

Sulphur Precip. B.P.—£56 to £65 per ton.
Thiocarbanilide.—2s. 6d. per lb.
Vermilion, Pale or Deep.—5s. 6d. per lb. Dearer.
Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic 80% B.P.—£41 per ton ex wharf London in glass containers.
Acid, Acetyl Salicylic.—2s. 9d. to 3s. per lb., according to quantity. Market slightly easier.
Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.
Acid, Boric B.P.—Prices reduced by £5 per ton. Crystal £46 per ton, Powder £50 per ton. Carriage paid any station in Great Britain.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 5d. per lb., less 5% for ton lots. Slightly upward tendency.
Acid, Gallic.—2s. 9d. per lb. for pure crystal, in cwt. lots. Easier.
Acid, Pyrogallic, Crystals.—6s. per lb. for 1 cwt. lots. 7s. 6d. per lb. for 7-lb. lots, according to quantity. Steady market.
Acid, Salicylic.—1s. 5d. to 1s. 6d. per lb., according to quantity. Market rather easier.
Acid, Tannic B.P.—2s. 9d. per lb. Quiet steady demand.
Acid, Tartaric.—1s. 1d. per lb., less 5%. Very firm. Demand good.
Amidol.—9s. per lb., d/d.
Acetanilide.—1s. 9d. per lb. Price lower owing to competition
Amidopyrin.—14s. per lb.
Ammonium Benzoate.—3s. to 3s. 6d. per lb., according to quantity.
Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
Atropine Sulphate.—12s. 6d. per oz. for English make.
Barbitone.—11s. 9d. per lb. Price lower owing to competition.
Benzonaphthol.—4s. 3d. per lb. spot. Weaker. Demand quiet.
Bismuth Salts.—Prices reduced by about 1s. 3d. to 2s. 3d. per lb. on account of the fall in the price of the metal.
Bismuth Carbonate.—10s. 6d. to 12s. 6d. per lb.
Bismuth Citrage.—10s. 3d. to 12s. 3d. per lb.
Bismuth Salicylate.—9s. to 11s. per lb.
Bismuth Subnitrate.—8s. 8d. to 10s. 8d. per lb. according to quantity.
(The price of Bismuth Metal has been raised from 5s. to 7s. 6d. per lb. Bismuth Salts have been advanced accordingly.)
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
Bromides.—Potassium, 1s. 11d. to 2s. 1d. per lb.; sodium, 2s. to 2s. 2d. per lb.; ammonium, 2s. 4d. to 2s. 6d. per lb., all spot. Much firmer. Forward prices higher.
Calcium Lactate.—1s. 6½d. to 1s. 10d., according to quantity. Fair demand and steady market.
Chloral Hydrate.—3s. 8d. per lb., duty paid.
Chloroform.—2s. 6d. per lb. for cwt. lots.
Creosote Carbonate.—6s. 9d. per lb. Little demand.
Formaldehyde.—£41 per ton, in barrels ex wharf.
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
Guaiacol Carbonate.—7s. 6d. per lb.
Hexamine.—2s. 7d. per lb. for cwt. lots.
Homatropine Hydrobromide.—25s. to 30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.
Hydroquinone.—4s. 3d. per lb. Nominal.
Hypophosphites.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate B.P.—1s. 11d. to 2s. 3d. per lb.
Magnesium Carbonate.—Light Commercial, £36 per ton net. Light pure, £46 per ton.
Magnesium Oxide.—Light Commercial, £72 10s. per ton, less 2½%, price reduced; Heavy Commercial, £25 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
Menthol.—A.B.R. recrystallised B.P., 44s. per lb.; April delivery. Synthetic 26s. to 31s. per lb., according to quality. English make. Increasing demand.
Mercurials.—Market flat. Mercury slightly firmer. Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 7d. to 3s. 9d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 3s. 10d. to 4s. per lb.
Methyl Salicylate.—1s. 5½d. per lb., for ton lots. Keen competition.
Methyl Sulphonal.—18s. 6d. per lb. Cheaper.
Metol.—11s. per lb. British make.
Morphone and Salts.—Reduced by 1s. to 1s. 3d. per oz.
Paraformaldehyde.—2s. 2d. for B.P. quality. Keen competition has brought prices down.
Paraldehyde.—1s. 2d. to 1s. 4½d. per lb., in free bottles and cases.
Phenacetin.—4s. 8d. per lb. in cwt. lots. Unsettled. Supplies exceed demand.
Phenazone.—6s. 3d. to 6s. 6d. per lb. Spot price lower than forward.
Phenolphthalein.—4s. 6d. to 5s. per lb. for cwt. lots.
Potassium Bitartrate 99/100% (Cream of Tratar).—83s. per cwt., less 2½% for ton lots.
Potassium Citrate.—1s. 10d. to 2s. 2d. per lb.
Potassium Ferricyanide.—1s. 9d. per lb. Quiet.
Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Steady market.
Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.
Potassium Permanganate.—B.P. crystals, 7½d. per lb., spot; commercial, 8d. to 8¼d. per lb., carriage paid. Slight reaction after recent advance.
Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
Resorcin.—4s. 9d. per lb. In fair quantities. Supplies exceed demand.
Saccharin.—63s. per lb. in 50 lb. lots.
Salol.—3s. 6d. per lb., for cwt. lots. Slightly dearer.
Silver Proteinate.—12s. per lb. for satisfactory product light in colour.
Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb. From natural benzoic acid. Supplies of good quality available.
Sodium Citrate, B.P.C., 1923.—1s. 11d. to 2s. 2d. per lb., according to quantity.
Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
Sodium Nitroprusside.—16s. per lb.
Sodium Potassium Tartrate (Rochelle Salt).—75s. per cwt., for ton lots and upwards.
Sodium Salicylate.—Powder, 2s. 2d. to 2s. 3d. per lb. Crystal, 2s. 3d. to 2s. 5d. per lb. Flake, 2s. 6d. per lb. Strong demand, market firmer.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
Sodium Sulphite, anhydrous, £27 10s. per ton, minimum 5 ton lots, according to quantity; 1-cwt. kegs included.
Sulphonal.—13s. per lb. accepted for quantity.
Thymol.—16s. per lb.

Perfumery Chemicals

Acetophenone.—10s. 9d. per lb.
Aubepine.—11s. 3d. per lb.
Amyl Acetate.—3s. per lb.
Amyl Butyrate.—6s. 6d. per lb.
Amyl Salicylate.—3s. 1½d. per lb.
Anethol (M.P. 21/22° C.).—4s. 6d. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 7½d. per lb.
Benzyl Alcohol free from Chlorine.—2s. 7½d. per lb.
Benzaldehyde free from Chlorine.—3s. 1½d. per lb.
Benzyl Benzoate.—3s. 1½d. per lb.
Cinnamic Aldehyde Natural.—16s. per lb.
Coumarin.—14s. 9d. per lb.
Citronellol.—22s. per lb.
Citral.—9s. 3d. per lb. Cheaper.
Ethyl Cinnamate.—10s. per lb.
Ethyl Phthalate.—3s. per lb.
Eugenol.—10s. 6d. per lb.
Geraniol (Palmarosa).—28s. 6d. per lb.
Geraniol.—9s. 6d. to 18s. 6d. per lb.
Heliotropine.—6s. 3d. per lb.
Iso Eugenol.—15s. per lb.
Linalol ex Bois de Rose.—24s. 6d. per lb.
Linalyl Acetate.—24s. 6d. per lb.
Methyl Anthranilate.—10s. per lb.
Methyl Benzoate.—5s. per lb.
Musk Ambrette.—50s. per lb.
Musk Ketone.—42s. 6d. per lb.
Musk Xylol.—11s. per lb.
Nerolin.—4s. 6d. per lb.
Phenyl Ethyl Acetate.—15s. per lb.
Phenyl Ethyl Alcohol.—14s. per lb.
Rhodinol.—40s. per lb.
Safrol.—1s. 8d. per lb.
Terpineol.—1s. 10d. per lb.
Vanillin.—25s. to 25s. 6d. per lb.

Essential Oils

Almond Oil, Foreign S.P.A.—13s. 9d. per lb.
Anise Oil.—2s. 9d. per lb.
Bergamot Oil.—16s. per lb.
Bourbon Geranium Oil.—22s. 6d. per lb.
Camphor Oil.—62s. 6d. per cwt.
Cananga Oil, Java.—11s. per lb.
Cinnamon Oil, Leaf.—6d. per oz.
Cassia Oil, 80/85%.—9s. 3d. per lb. Cheaper.
Citronella Oil.—Java, 85/90%, 4s. 9d. per lb. Ceylon, 2s. 8d. to 2s. 11d. per lb., according to quality.
Clove Oil.—7s. 6d. per lb.
Eucalyptus Oil, 70/75%.—2s. per lb.
Lavender Oil.—French 38/40% Esters, 35s. per lb.
Lemon Oil.—3s. 3d. per lb. Cheaper.
Lemongrass Oil.—5s. 9d. per lb.
Orange Oil, Sweet.—11s. 3d. per lb.
Palma Rose Oil.—15s. 3d. per lb.
Otto of Rose Oil.—Bulgarian, 42s. 6d. per oz. Anatolian, 28s. per oz.
Palma Rosa Oil.—16s. 9d. per lb.
Peppermint Oil.—Wayne County, 65s. per lb. Japanese, 17s. 3d. per lb.
Petitgrain Oil.—9s. 9d. per lb.
Sandal Wood Oil.—Mysore, 26s. 7d. per lb. Australian, 18s. 6d. per lb.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, May 15, 1925.

BUSINESS in heavy chemicals has been very quiet during the past week, and there is nothing of importance to record.

Industrial Chemicals

ACID ACETIC.—In moderate demand, and prices unchanged. 98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £40 to £42 per ton; 80% technical, £39 to £41 per ton, packed in casks c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flaked, £40 per ton; powdered, £42 per ton, packed in bags, carriage paid U.K. stations, minimum ton lots.

ACID CARBOLIC, ICE CRYSTALS.—In little demand, and price reduced to about 4¾d. per lb. delivered, with possible slight reduction for bulk business.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at about 1s. 4½d. per lb., less 5%, ex store, spot delivery. In usual steady demand.

ACID FORMIC, 85%.—Spot material quoted £49 10s. per ton, ex store. Offered from the continent at about £48 5s. per ton, ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand, quoted £23 15s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—In rather better request. Spot lots now quoted 4d. per lb., ex wharf. Offered from the continent at about 3¾d. per lb. c.i.f. U.K. ports, duty paid.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Still in fair demand. Price unchanged at about 1s. per lb., less 5%, ex store. Offered for prompt shipment from the continent at 11¾d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Quoted £6 15s. per ton, ex store, spot delivery. Offered for prompt shipment from the continent at about £6 5s. per ton, c.i.f. U.K. ports.

ALUM, LUMP POTASH.—Offered from the continent at about £8 per ton, c.i.f. U.K. ports. Spot lots quoted £9 5s. per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at 1s. 4½d. per lb., ex station, containers extra and returnable.

AMMONIA, CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered U.K. ports.

AMMONIA, LIQUID, 880°.—In steady demand. Unchanged at 2½d. to 3d. per lb. delivered, according to quantities.

AMMONIA, MURIATE.—Grey galvaniser's crystals of English manufacture quoted £29 10s. per ton, ex station. Offered from the continent at about £25 per ton, c.i.f. U.K. ports. Fine white crystals quoted £20 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material now quoted £26 per ton, ex store. Offered for early delivery at about £25 per ton, ex wharf.

BARIUM CHLORIDE, 98/100% CRYSTALS.—English material now quoted £10 per ton, ex store. Foreign on offer at about £8 10s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Spot lots quoted £10 10s. per ton, ex station. Contracts 20s. per ton less.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £24 10s. per ton; crystals, £25 per ton; powdered, £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English makers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 5s. per ton, ex works, packed in casks free.

COPPER SULPHATE.—English material unchanged at about £24 10s. per ton, f.o.b. U.K. port. Continental quoted about £22 10s. to £23 per ton, c.i.f. U.K. ports.

FORMALDEHYDE, 40%.—On offer from the continent at about £39 per ton, c.i.f. U.K. ports. Spot material quoted £40 per ton, ex store.

GLAUBER SALTS.—White crystals of English manufacture unchanged at £4 per ton, ex store or station. Continental on offer at about £3 5s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Unchanged at about £42 per ton, ex store, spot delivery. Offered for prompt shipment from the continent at about £40 per ton, c.i.f. U.K. ports.

LEAD, WHITE.—Quoted £43 10s. per ton, ex store.

LEAD ACETATE.—Rather cheaper. White crystals now offered for spot delivery at £44 10s. per ton, ex store. Offered from the continent at £43 10s. per ton, c.i.f. U.K. ports.

LEAD NITRATE.—Unchanged at about £41 per ton, ex store.

MAGNESITE GROUND CALCINED.—Unchanged at about £8 per ton, ex station, prompt delivery.

MAGNESIUM CHLORIDE.—Quoted £2 17s. 6d. per ton, c.i.f. U.K. ports, prompt shipment.

POTASH CAUSTIC, 88/92%.—Unchanged at about £29 per ton, ex wharf, prompt shipment from the continent. Spot material available at about £30 10s. per ton, ex store.

POTASSIUM BICHROMATE.—Price for home consumption 5d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Spot material unchanged at about £25 15s. per ton, ex store. Offered for prompt shipment from the continent at about £25 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE.—Spot material unchanged at about 4d. per lb., ex store. Offered for early delivery at 3¾d. per lb., c.i.f. U.K. ports.

POTASSIUM NITRATE, SALTPETRE.—Refined granulated 99% quoted at about £28 per ton, ex store. Quoted £24 10s. per ton, c.i.f. U.K. ports, for prompt shipment from the continent.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—On offer at 7½d. per lb., ex store. Offered for prompt shipment from the continent at about 7¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Spot material still quoted 7¼d. per lb., ex store. Offered for prompt shipment from the continent at about 7d. per lb., ex wharf.

SODA CAUSTIC.—76/77%, £18 per ton; 70/72%, £16 12s. 6d. per ton. Broken 60%, £17 2s. 6d. per ton. Powdered 98/99%, £21 7s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—On offer from the continent at about £19 10s. per ton c.i.f. U.K. ports. Spot material quoted £21 10s. per ton, ex store.

SODIUM BICARBONATE.—Refined re-crystallised quality £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali 58%, £8 12s. 3d. per ton ex quay or station.

SODIUM HYPOSULPHITE.—English material quoted £9 15s. per ton, ex station. Continental about £8 5s. per ton c.i.f. U.K. ports. Pea crystals of English manufacture at £14 per ton, ex station.

SODIUM NITRATE.—Ordinary quality quoted £13 7s. 6d. per ton, ex store. 96/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE 100%.—Offered from the Continent at about £22 per ton c.i.f. U.K. ports. Spot material quoted £24 10s. per ton, ex store.

SODIUM PRUSSIATE, YELLOW.—Quoted 4d. per lb. ex store, but could probably be obtained at a fraction less.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton f.o.r. works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—English manufacturers quote 60/62% solid, £15 per ton; broken, £1 per ton more; flake, £2 per ton more; crystal 31/34%, £9 5s. per ton, carriage paid U.K. stations, minimum four ton lots, with slight reduction for contracts over a period. 60/62% solid offered from the continent at about £10 15s. per ton c.i.f. U.K. ports; broken, £1 per ton more. 30/32% crystals, £8 5s. per ton c.i.f. U.K. ports.

SULPHUR.—Flowers, £9 10s. per ton; roll, £8 10s. per ton; rock, £8 7s. 6d. per ton; ground, £8 5s. per ton, ex store. Prices nominal. American crude sulphur on offer at about £5 2s. 6d. per ton c.i.f. U.K. ports.

ZINC CHLORIDE.—97/98% of continental manufacture quoted £23 per ton c.i.f. U.K. ports. English material for export on offer at about £25 to £26 per ton f.o.b. U.K. port.

ZINC SULPHATE.—In moderate demand and price unchanged at about £12 10s. per ton, ex store.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHANAPHTHYLAMINE.—Good home inquiries, 1s. 3d. to 1s. 3½d. per lb.

PARANITRANILINE.—Some home inquiries, 2s. 2d. per lb.

BENZALDEHYDE.—Home inquiries, 3s. 2d. per lb.

META NITRO PARA TOLUIDINE.—Home inquiries, 7s. per lb.

New Treasury Grants

£2,000,000 to Synthetic Ammonia and Nitrates, Ltd.

FURTHER guarantees under the Trade Facilities Acts have been given by the Treasury, amounting to £4,441,500, bringing the aggregate at March 31 up to £55,577,811. The grants include the following:—North British Aluminium Co., Ltd., £500,000; Anglo-Scottish Beet Sugar Corpn., Ltd., £280,000; Dunstable Portland Cement Co., Ltd., £100,000; Doornkop Sugar Estates of Natal, Ltd., £50,000; Orchard Sugar Co., Ltd., £80,000; Synthetic Ammonia and Nitrates, Ltd., £2,000,000; Eastwoods Cement, Ltd., £75,000.

In several cases the amounts guaranteed are in addition to sums already covered, and are to be applied to the same purposes, namely: North British Aluminium Company, equipment of a power station and aluminium factory; Anglo-Scottish Beet Sugar Corporation, erection of sugar beet factories. The guarantee of £2,000,000 to Synthetic Ammonia and Nitrates, Ltd., is to cover the extension of plant. Other projects covered by the guarantees are the extension of electrical supplies, the erection of cement works, the equipment of sugar factories, the building of ships, and the improvement of harbours. Guarantees already announced total £51,186,311.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, May 15, 1925.

ALTHOUGH no great change in the position of the chemical market here can be reported this week, one or two firms have had rather a better time. This experience, however, is not general. Textile chemicals are in moderate request, some sections of the cotton industry, though not all, being fairly busy. On export account the volume of business does not grow much. The best of the markets are still the Colonies and the East, Continental demand keeping very modest. As far as prices are concerned there have been few changes since last week and these are not of much importance.

Heavy Chemicals

Prussiate of soda is offering at 3¾d. per lb., but business is on small lines. Glauber salts are attracting little attention, though prices are still round £3 10s. per ton. Saltcake is quiet and easy, about £3 15s. to £4 per ton now being the current range of values. Chlorate of soda keeps steady and is fairly active at 2⅞d. per lb. Bleaching powder is in moderate request at the recent level of £9 10s. per ton. Hyposulphite of soda is in fair inquiry, with prices maintained at £13 10s. per ton for photographic crystals and £9 5s. for commercial quality. Sulphide of sodium is not very active, but values have not changed much; 60-65 per cent. concentrated solid is on offer at £13 15s. per ton and crystals at £9 10s. Caustic soda continues in fairly good demand at from £15 12s. 6d. per ton for 60 per cent. strength to £18 for 76-77 per cent. Bicarbonate of soda is steady and in fair inquiry at £10 10s. per ton. Phosphate of soda is quiet and easy at £12 10s. to £12 15s. per ton. Bichromate of soda keeps steady at 4d. per lb., and a moderate amount of trade is being put through. Acetate of soda is selling in small quantities at £18 10s. to £19 per ton. Alkali is firm and in fairly good demand at £6 15s. per ton. Soda crystals keep steady at £5 5s. per ton.

Among potash compounds caustic and carbonate are only moving in moderate quantities, but values are well held at recent levels. Caustic is offering at £29 to £30 per ton and carbonate at £24 10s. to £25. Permanganate is slow and rather easy at 6¼d. to 6½d. per lb. for commercial quality and 7½d. for pharmaceutical. Bichromate of potash is firm and in fair request at round 5d. per lb. Chlorate of potash is steady at 3¼d. to 3½d. per lb. Yellow prussiate of potash is rather quiet though still quoted at 7d. per lb.

No expansion in the call for arsenic can be reported and values are anything but firm; white powdered, Cornish makes, is quoted in Manchester at £27 to £28 per ton. Sulphate of copper is offering at £24 5s. to £24 10s. per ton; the demand for this material continues restricted. Commercial Epsom salts are in moderate request at £4 5s. to £4 10s. per ton, with magnesium sulphate, B.P. quality, steady at round £6 per ton. Acetate of lime is maintained at £14 10s. to £15 per ton for grey material and £9 10s. for brown. Acetate of lead is selling slowly but values are steady; white is quoted at £45 and brown at £40 to £41. Nitrate of lead is unchanged at £41 to £42 per ton, but demand is quiet.

Acids and Tar Products

Oxalic acid is steady and moderately active at round 3¾d. per lb. Acetic acid meets with a fair inquiry at £39 to £40 per ton for 80 per cent. commercial quality and about £67 for glacial. Tartaric acid is in quietly steady demand at round 1s. per lb. Citric acid keeps firm at 1s. 4¼d. per lb.

Coal tar products are quiet generally, but values have not altered much. Pitch is still more or less nominal at about £40 per ton, and little business is being done. Naphthalenes are offering at £14 10s. to £15 per ton for refined, and £4 5s. and upwards for crude qualities. Carbolic acid is very inactive at 5d. per lb. for crystals and 1s. 7d. per gallon for crude. Creosote oil is steady at 6¼d. per gallon, and solvent naphtha at 1s. 5d.

The Late Lord Leverhulme

THE funeral of the late Lord Leverhulme took place at Port Sunlight on Monday in the presence of a great gathering of mourners who paid remarkable tribute to a great man. The directors of Lever Brothers, Ltd., made a fitting record of their leader in the resolution passed on Monday. It included the following passages:—"They desire to place on record their admiration of his life and work, distinguished by genius, courage, imagination, and devotion to duty. His career was inspired by the highest ideals of public spirit and services to his fellow men, and notably by his interest in the welfare, education, better housing, and amelioration of the conditions of labour of every rank of industrial worker, as evinced by his creation of co-partnership, life insurance, old age pensions, educational and other schemes for the benefit of his employees, and by his gifts to the communities of Port Sunlight and Merseyside, to his native town of Bolton, and to the nation. They revere the memory of his natural simplicity, the charm of his character, the wealth of his affection, and the loyalty of his friendship.

"The directors extend to his son, their colleague, and to all members of the family their heartfelt sympathy in their loss, and assure them that the memory of his life and character will be an inspiration and his precepts a guide to those whom he has left behind to carry on the great business to which he brought honour and prosperity and which will endure as a fitting monument to his life's work."

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to June 13, 1925.

"HEXALINE."

457,189. For chemical substances used in bleaching and dyeing processes. Class 1. George Harvey Briggs, 75, Ravald Street, Blackfriars Road, Salford, Manchester, colour and chemical merchant. March 14, 1925.

"DORLIMITE."

457,524. For chemical substances used in manufactures, photography or philosophical research and anti-corrosives. The Dorking Grey-Stone Lime Co., Ltd., Betchworth, Surrey, manufacturers. March 25, 1925.

"KILSOL."

453,780. For liquid and powdered disinfectants, but not including insecticides, fungicides, and disinfectant soaps. Hull Chemical Works Co., Kirkby Street, Kingston-upon-Hull, soap and disinfectant manufacturers. November 19, 1924.

"LIGNOL."

457,360. For insecticides. Samuel Hodgson Eastburn, trading as Saml. H. Eastburn and Co., 164, Queen's Road, Gorton, Manchester, chemical manufacturer. March 19, 1925.

Company News

BADISCHE ANILINE CO.—It is announced that a report has been current on the Frankfort Bourse that the Aniline concern propose to pay a dividend of 8 per cent.

BARROW, HEPBURN AND GALE.—The directors announce the payment of a dividend of 4½ per cent. on the preference shares on account of arrears to September 30 last.

LAUTARO NITRATE CO., LTD.—At an extraordinary general meeting held in London on Tuesday a resolution was passed sanctioning an amalgamation with the Antofagasta Nitrate Co.

J. AND E. ATKINSON, LTD.—A dividend of 10 per cent. on the ordinary shares for the past year is recommended, adding £12,000 to an advertising reserve fund, and carrying forward £12,215.

CRAIG AND ROSE.—Including £6,384 brought in, the net profit for the year ended March 31 last is £21,571. A dividend of 6 per cent., tax free, is recommended, £3,000 written off goodwill, and £7,571 carried forward.

LONDON NITRATE CO., LTD.—The directors have declared an interim dividend on account of the year to June 30 next of 1s. 6d. per share, payable free of income tax, on June 2. This is the same as was paid in June last year.

MANGANESE BRONZE AND BRASS CO.—The net profits for the year 1924 were £6,503, after providing for debenture interest, and the surplus brought forward was raised to £10,485, which it is proposed to carry to the new account.

AGUAS BLANCAS NITRATE CO.—The report for the year 1924 shows a gross profit of £55,049. Taxation absorbs £10,000, and the directors propose a dividend of 75 per cent. for the year, carrying forward £8,972, compared with £8,753 brought in.

BRUNNER, MOND AND CO.—The directors have declared a dividend on the ordinary shares of 7 per cent. actual, making 10½ per cent. for the year. The sum of £93,000 is placed to the general reserve, £170,000 to suspense account, and £90,000 is carried forward.

ARIZONA COPPER CO.—The report states that dividends on holdings in Phelps Dodge Corporation amounted to £50,453, while expenses were £14,349; £9,753 was brought in and £70,000 transferred from reserve, making £115,858. A dividend of 1s. 6d. per share absorbs £113,992, the balance being carried forward.

ANGELA NITRATE CO.—For the year 1924 the report shows a gross profit of £26,092. After deducting London expenses £2,235 and income tax (Chile) £219, there remains £23,637, and balance brought forward was £3,804, making £27,441. The directors propose to reserve £5,000, and pay on May 21 a further dividend of 15 per cent., making 25 per cent. for the year, carrying forward £4,941, subject to corporation profits tax.

BRITISH COTTON AND WOOL DYERS' ASSOCIATION, LTD.—The gross profits for the year ended March 31 last amounted to £197,388. The net profit works out at £146,004, and £39,699 was brought forward from the previous year. A dividend of 10 per cent. is proposed for the year, £50,000 being placed to the reserve fund, £5,000 to the contingents fund, £10,000 to the employees' benefit fund, and £43,287 carried forward.

SIAMESE TIN SYNDICATE.—The accounts for the year 1924 show that, after writing off £4,502 for depreciation of plant, machinery, etc., the net profit amounted to £124,271, and the balance brought forward was £13,510, making a total of £137,781. Additional remuneration of directors amounts to £2,050; directors have decided to place to reserve £40,000, and recommend a final dividend of 15 per cent., making 55 per cent. for year, leaving a balance to be carried forward of £13,231.

BRITISH DYESTUFFS CORPORATION, LTD.—A circular has been issued to the shareholders, in which the directors state that they are preparing for submission to the shareholders a scheme of reconstruction of the company's capital. It is proposed that this scheme should deal with the financial position of the company up to May 1, 1925. Under these circumstances it will be necessary to postpone for a short time calling the shareholders together for the annual general meeting, until both the accounts (which will be made up to May 1, 1925) and the scheme of reconstruction can be presented to the shareholders.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LUBRICATING OIL.—Tenders invited for supply of about 140 barrels of lubricating oil of high flash point and good viscosity for Eastbourne Council. Motor Omnibus Committee, Town Hall, by May 22.

SULPHURIC ACID.—Twelve months' supply for Edinburgh Gas Department. Tenders to Town Clerk by May 18.

SODA CRYSTALS.—Supply of soda crystals and soda ash required by the Commissioners of H.M. Works. Forms of tender from Controller of Supplies, Office of Works, King Charles Street, London, S.W.1.

LUBRICATING OILS.—The Roumanian State Railways invite tenders by June 9 for supply and delivery of 200,000 kilos of lubricating oil for steam locomotives. United Kingdom firms interested can obtain further particulars upon application (Reference BX 1,787).

CHEMICALS.—A commission agent in Stockholm desires to represent British firms dealing in chemicals and iron and steel. —(Reference No. 591.)

CHEMICALS.—A firm of commission agents in Oslo desires to represent British manufacturers of lubricants, oil-cans, grease-cups, etc., chemicals for paper and cellulose factories, especially "aluminoferric" in slabs and powder, calcium soda, bleaching powder, etc. (Reference No. 586.)

Tariff Changes

NEW ZEALAND.—The import duty on foreign salt has been increased from 15 per cent. *ad valorem* to 15 per cent. *ad valorem* plus £1 per ton, as from April 16. Salt from the U.K. remains duty free.

PANAMA.—The Customs duty on kerosene imported has been reduced from 1·50 balbaos to 37½ cts. per 100 litres.

CZECHOSLOVAKIA.—A long list of goods which can now be imported without licence or declaration includes items in the following tariff sections—animal products, fats, fatty oils, minerals, dyeing and tanning materials, gums and resins, india rubber, etc., glass and glassware, iron and ironware, precious metals, chemical auxiliary substances, etc., candles, soap, etc. The full list appears in the *Board of Trade Journal* for May 7.

UNION OF SOUTH AFRICA.—The maximum duties of the tariff which is now before the South African Legislature became operative, as from April 9, only in those cases in which an *increase* over the old tariff rates is shown. Decreases of duty under the proposed new maximum tariff cannot become operative until sanctioned by Act of the Union Parliament, and the old rates of duty remain, therefore, operative in such cases. As regards the preference on United Kingdom goods, until the new preference proposals are sanctioned by Parliament, United Kingdom goods will continue to enjoy the 3 per cent. *ad valorem* rebate as formerly.

Dead Sea: Commercial Rights

IN view of the existence in the waters of the Dead Sea of certain minerals, the winning and marketing of which for commercial purposes is believed to be practicable, the Crown Agents for the Colonies, acting for the Government of Palestine, are prepared to receive applications for the grant of rights to undertake such operations. Applications must reach the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, not later than October 31, 1925, and must give an indication of the terms which applicants will propose to offer in consideration for any rights granted and of proposed arrangements for transport of recovered minerals. Applicants would also be required to give an undertaking strictly to comply with any regulations made by the Government of Palestine in the interests of public health, and to keep the Government at all times fully informed as to the technical and financial results of their operations.

An account of preliminary investigations made by the Palestine Government will very shortly be obtainable from the Crown Agents at the price of one guinea.

Universities and Agricultural Research

A Degree Proposed

THE annual conference of the Universities of Great Britain and Ireland was held at King's College, London, on Saturday, May 9.

SIR DANIEL HALL, Chief Scientific Adviser, Ministry of Agriculture, opening a discussion on the subject of agriculture, referred to the teaching of scientific workers and officials. Many men were required at home and in the Colonies with that kind of instruction. It was essentially post-graduate, and ought to be based on a degree course in arts or pure science. It was no use setting a man to investigate as a teacher in agricultural chemistry if he had learned his agricultural chemistry in a course of agriculture. In the United Kingdom we did not want more agricultural colleges, but the various Universities which had not yet founded a department of agriculture could still contribute vitally to the supply of men as investigators and teachers, if only they had some contract, so that when they had taken their degree in biology, chemistry, or economics they might realise they had a definite career open to them. Universities should not attempt to cope with each of these categories but to specialise on one or other.

PROFESSOR GILCHRIST, Armstrong College, emphasised the need of research work reaching the farmer.

PROFESSOR WHITE, Bangor, said he thought Universities would hesitate before making a change to post-graduate courses. He did not think there was any difficulty in keeping alive a man's interest in agriculture while he was pursuing an honours course in pure science.

PROFESSOR DUNSTAN, Principal of the Agricultural College, Cirencester, declared that the time had come when the Universities should meet at a round-table conference to decide the scope of the agricultural degree. (Applause.) Agriculture ought to be a vital part of every University, and full consideration ought to be given to the new situation. In the majority of cases the Bachelor of Science and Agriculture was neither a good scientist nor a good agriculturist. A longer period than three years had to be given to such students.

PROFESSOR HENDRICK, Aberdeen, disagreed with the view that a degree in agriculture could not be made suitable for the training of administrative officers. The problem was to present scientific and practical training in proper proportions, and in Scotland it took five years to secure an honours degree in agricultural science.

German Chemical Mergers

CONCENTRATION of the German chemical industry is not confined to the Dye Cartel. The advantages to be derived by eliminating unnecessary competition and lowering costs have been investigated by other chemical enterprises not affiliated with the I.G., and important agreements which have significance in view of their eventual effect on foreign competion, particularly American, have been entered into, according to a U.S. Trade Commissioner. The Rhenania, Verein chemischer Fabriken A.G., of Aachen, entered a community of interests with Chemische Fabriken Kunheim & Co., A.G., Berlin, putting both large enterprises under a common administration and pooling both their domestic and export markets. This community embraces 14 main factories along with a number of associated plants.

The Stassfurter chemische Fabrik A.G. and the Anhaltische Salzwerke G.m.b.H. entered into a 15 years' agreement, under which the Anhaltische Salzwerke will modernise and extend the plants of the Stassfurter enterprise. Previously, the Concordia, Chemische Fabrik Leopoldshall, had entered into a similar contract with the two plants first named. In Central Germany a fusion was effected between the Saechischer Farbenfabriken Cunsdorf I.C. Schulz A.G. and the Oberpfaelsische Farbwerke A.G. of Neunkirche. In Hamburg the Hamburg-Emshorner Farbwerke A.G. was founded to take over the operation of the Hamburg-Emshorner Farbwerke Speetzen & Winkler.

These agreements have not been confined to the home market, but the German chemical industry has recently sought and found some important affiliations abroad. The Chemische Fabrik von Heyden, Dresden-Radebeul, has made certain direct connections with American interests.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry make no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

RUSSELLS BRITISH OIL CO., 33, Adams Street, Birmingham, oil merchants. (C.C., 16/5/25.) £13 1s. 8d. April 6.

WILSON BROS., Albert Road, Farnworth, colour manufacturers. (C.C., 16/5/25.) £19 19s. 4d. March 23.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

VICKERS (BENJAMIN R.) AND SONS, LTD., Leeds, oil manufacturers. (M., 16/5/25.) Registered April 30, £3,400 mortgage, to Mrs. C. T. M. Wilkinson, 1, Amberley Grove, Leopold Street, Leeds, and another; charged on property near Gascoigne Street and White Horse Street, Leeds. *Nil. December 29, 1924.

London Gazette

Company Winding Up

COMET CHEMICAL CO., LTD. (C.W.U., 16/5/25.) Winding up Order, May 5.

Partnership Dissolved

SMITH, HUGHES AND CO. (Elsie Elizabeth SMITH and Evan Edward HUGHES), chemical merchants and manufacturers, 23, College Hill, London, by mutual consent as from March 11, 1925. Debts received or paid by E. E. Smith, who continues the business.

New Companies Registered

HEATPROOF BLACK CO., LTD.—Manufacturers of and dealers in polishes, blacking enamels, varnishes and lacquers, etc. Nominal capital, £500 in £1 shares. Secretary: N. Cartland, 88–90, Chancery Lane, London, W.C.2.

ORCHARD SUGAR CO., LTD., 17, Grey Place, Greenock. Growers, cultivators and buyers of sugar beet or other sugar-producing substances; makers, manufacturers, refiners, exporters and importers of and dealers in sugar (beet or cane), saccharine, etc. Nominal capital, £170,000, in 50,000 preference and 120,000 ordinary shares of £1 each.

P. B. SILLIMANITE CO., LTD.—To acquire lands, estates, mines, oil wells and mineral properties, to prospect, explore, open, and work claims or mines, and raise, dig, and quarry for gravel, gold, silver, copper, lead, sillimanite, and other minerals and ores. Solicitors: Godden, Holme and Ward, 34, Old Jewry, London, E.C.2.

Fluor Spar Wanted

WE have received the following inquiry from a well-known lime firm:—

"I particularly wish to know where I can obtain fluor spar averaging 80/85 per cent. calcium fluoride and 2½/5 per cent. silica max., in lots of 500 to 1,000 tons, or, if the supply was regular, probably 200 ton lots would be acceptable. Also clean washed gravel grade of good quality. Your readers will gather from this that the quantities required are fairly large. The material is for shipment."